Allied-Axis

THE PHOTO JOURNAL OF THE SECOND WORLD WAR



Sturmgeschütz at the front

U.S. M3 Lee Medium Tank

U.S. Self-propelled Rockets

German SdKfz. 250 Halftrack

German 35(t) Medium Tank

Issue

10

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PzKpfw 35(t)



The Czechoslovak armament industry was responsible for some fairly innovative tank designs in the period between the world wars. They openly courted foreign contracts and continually developed several tank designs in the early thirties. One of these designs was the LT VZ.35. Developed to meet the need for a sound medium tank design, its development history is colored with intrigue between the various parties involved. Testing and manufacturing difficulties further clouded its development and the tank was actually being delivered to the troops while these problems were occurring. Most of these difficulties were eventually worked out and the tanks were urgently ordered to comply with the needs of the Czechoslovak Army. The political situation with Germany was rapidly deteriorating and the army had called for a general mobilization in September of 1939. At the time, the LT VZ.35 was also being manufactured for the Rumanian army under the designation R2. Many of these tanks were confiscated by the Czechoslovak Army just prior to the Munich agreement. As the Munich agreement effectively rendered the Army useless, they lost interest in the further development and deployment of the LT VZ.35. After the annexation and establishment of the "protectorate," all the Czechoslovak Army's tanks were scheduled to be integrated into the German Wehrmacht. This integration began in the spring of 1939 and some 244 LT VZ.35 were transferred to German Army control. Several changes were made to the vehicle for German service; the most significant of which was the addition of a loader for the main gun. This required modification of the internal ammunition stowage. Other small changes included the addition of a Notek light, the addition of a Fu5 radio set and the installation of a Bosch magneto. The tank was re designated PzKpfw 35(t). The main armament was the 3.7cm anti-tank gun and this was supplemented with two 7.92mm machineguns. By the start of the Polish campaign in September 1939, both the 11th Panzer Regiment and the 65th Panzer Abteilung were fully equipped with the new tank. The 11th and the 65th composed the 1st Leichte Division and they fought through the Polish campaign and lost a total of seven tanks to enemy action, only one of which was later declared a total loss. Prior to the French campaign, the 1st Leichte Division was renamed the 6th Panzer Division. **Above:** This 35(t) of the 6th Panzer Division is believed to be passing through the outskirts of Stonne, France on the way to the open country beyond. (BA)



After May 16th, the 6th was part of the exploitation of a 62-mile gap in the French lines and the flat open country beyond. Their advance continued towards the Oise river and the city of Guise. These two tanks are seen during that phase of the campaign. Both tanks are from the company headquarters, as denoted by the "A" in their tactical numbers. The tank on the left is a Panzerbefehlswagen 35(t) command tank. This vehicle carried both the Fu5 and the Fu8 radio sets and utilized the large frame antenna on the rear deck. Interestingly, the main gun was replaced with a wooden replica to make room for the additional radios. Both 7.92mm machineguns were retained. The unit "logo" of the 65th Panzer Abteilung can be clearly seen on the turret. (BA)



A PzKpfw 35(t) of the 65th Panzer Abteilung leads a column of Panzer IVs during the May breakout. This breakout took the division all the way to Cambrai and then on to Cassel on May 29th. According to the book *Nuts & Bolts, Vol. II, Panzerkampfwagen 35 (t)*, this tank illustrates another version of the 65th Panzer Abteilung's logo. Normally formed from an overlapping N and Z, this example appears to be formed from an O and a Z. (BA)



In early June, the XLI Panzer Corps became part of Panzergruppe Guderian. The 6th Panzer Division was sent south to cross the Aisne river and assault units on and along the southern Marne river. The last major objective of the campaign was the capture of the fort at Epinal on the river Mosel. Here, tanks are seen approaching the high ground outside of Epinal on or about June 18th, 1940. (BA)



A 35(t) of the Panzer Regiment 11 of the 6th Panzer Division is greeted with enthusiasm by the local civilian population. Among them are nationalist backed militiamen, probably belonging to the "Secret Committee of Liberation," greeting the troops with an extend arm. Note their white arm bands. The signs indicate that this photo was taken in the north of Latvia, in the sector of Balvi-Rugaji. The first of these two cities was taken by the 1st Panzer Division on July 2, 1941. (BA)





Left: This vehicle has a rather unique modification to the turret hatch. It appears to have been cut in half and reassembled in some fashion. This modification is not seen in any other photos. (BA) **Right:** This propaganda photo was originally captioned that the "German people have come to release the Baltic Peoples from the Soviet yoke." The photo provides a good look at the left side mounted shovel and the distinctive "double X" insignia of the 6th Panzer Division. (BA)



A 35(t) of the 7th Company supports an infantry attack south of the city of Pskow on July 8th. The 6th Panzer Division had six companies of tanks in each of its battalions at this time, but considered the HQ Company as number one and the second company was numbered "1" and so on. The 6th, or heavy company, was composed of Panzer IVs and they can be seen in other photos of this attack. Note the amount and variety of equipment stowed on the back of this tank. (BA)



The next combat assignment for the 6th Panzer Division was Operation Barbarossa in June of 1941. The division crossed the East Prussian border near the town of Tilsit into Lithuania with the objective of striking though the Baltic states and taking the Russian city of Leningrad (St. Petersburg). This photo is believed to have been taken during the second week of the campaign as the division entered Latvia. Many towns and villages greeted the Germans as liberators. Fighting is clearly not on the minds of this crew, as all of them, except the driver, are on the outside. All gun covers are installed, as well. (BA)



The 6th Panzer Division continued towards Leningrad as part of Panzergruppe 4, reaching the city of Panetschje on the Luga River on July 14th. The division paused here to take on supplies before the final drive to Leningrad. They had covered 497 miles in three weeks. This column is seen approaching the city on July 13th. (BA)



The 6th Panzer Division had originally entered France through the Ardennes as part of von Kleist's Army Group A and the XLI Panzer Corps. The division crossed the Luxembourg border on May 12th and fought toward the Meuse River until crossing it on the 15th. The French town of Montcornet was captured that same evening. A 35(t) is seen here in the Place Ducale in the City of Charleville-Mézières, the first major city on the French side of the river and on the Northern edge of the penetration. This photo is believed to have been taken on Thursday, May 16th. (BA)



For the remainder of July, the 6th Panzer Division continued its advance towards Leningrad. This 35(t) crew gazes at one of their adversaries, a destroyed T-28 medium tank. (BA)



The approaches to the city were marked by dense woodland and this 35(t) is seen here negotiating a dusty forest track, probably during the first week of September 1941. (BA)



In early July the 6th Panzer Division crossed the Dvina river and crossed the so-called "Stalin Line" built along the river. This was a series of in-depth fortifications and tank traps, which were poorly organized and improperly defended by the Russians. This 35(t) is seen crossing through one of the tank barriers on July 4th 1941. Riding aboard to support the rapid advance is a heavy MG platoon of the 6th Rifle Brigade. This was part of the 6th Panzer Division's organic infantry component. (BA)



Starting on September 9th, the 6th Panzer Division began a series of attacks aimed at the capture of Leningrad. From the jumping off point of Redinko, they attacked Northeast, taking the towns of Salisi, Pudostia and Romanova. This photo is believed to have been taken during the opening phases of the September 9th attacks. A group of infantryman of the 6th Infantry Brigade is assisted by a 35(t) while reducing a pocket of resistance near Salisi. The 6th Panzer Division was removed from the Leningrad battle on October 2 and sent south to join in the advance on Moscow. (BA)

At least two 35(t) have survived the war and are on public display. One is at the Fortress Museum in Belgrade, while the other is located at the U.S. Army Ordnance Museum at Aberdeen, Maryland. The following photos are of the Aberdeen vehicle. This example was found at Hillersleben in 1945 and shipped back to the U.S. for evaluation. No other information about the tank is known.

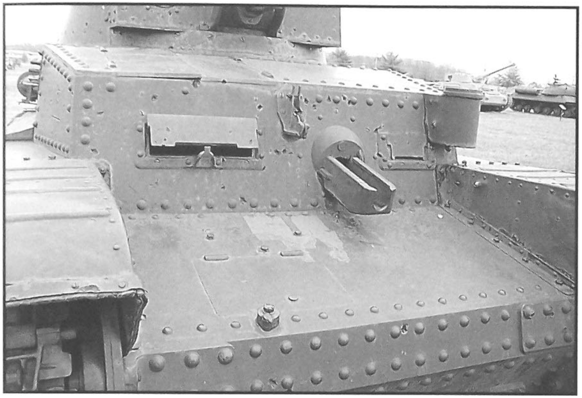


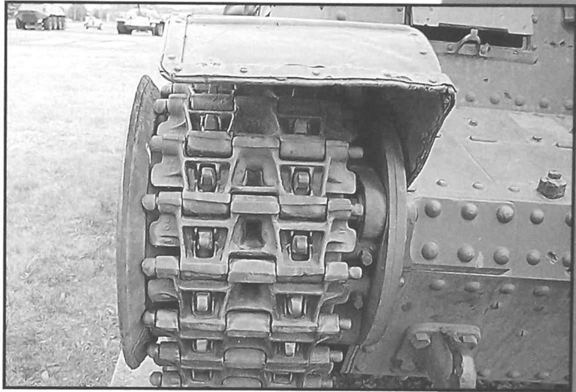


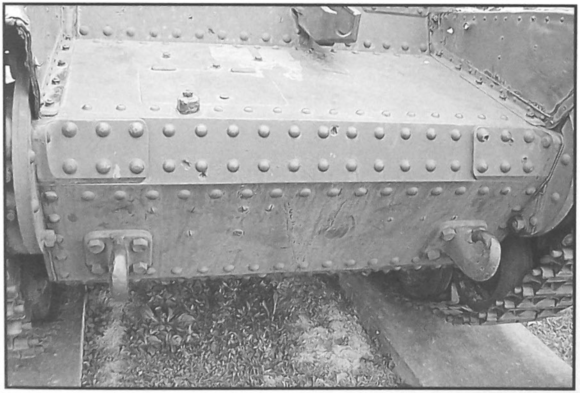
One of the unique features of the 35(t) was the capped drive sprocket and idler wheel. The dished portion of each kept the dry pin tracks from coming off in severe situations. The tracks are composed of 107 links each and the track width is 27.2cm. Unlike most German tanks, the 35(t) featured rear sprocket drive.

The suspension of the 35(t) consisted of two pairs of roadwheels each mounted on a central frame, with two frames per side. Each frame was sprung with a series of leaf springs. The roadwheel pairs each consisted of two wheels with rubber tires, for a total of eight per frame. The rubber of the wheels was susceptible to wear on long road marches.



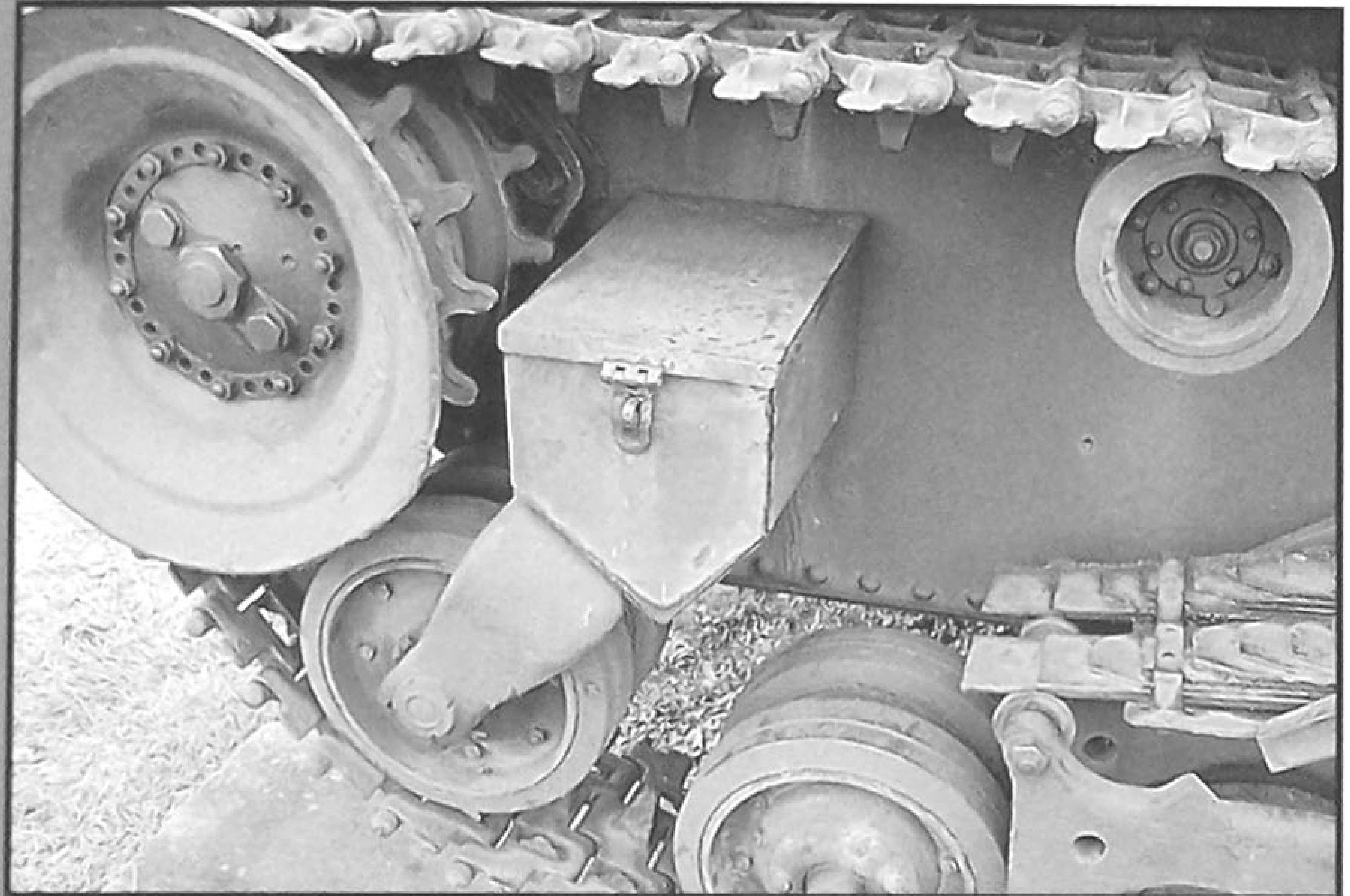


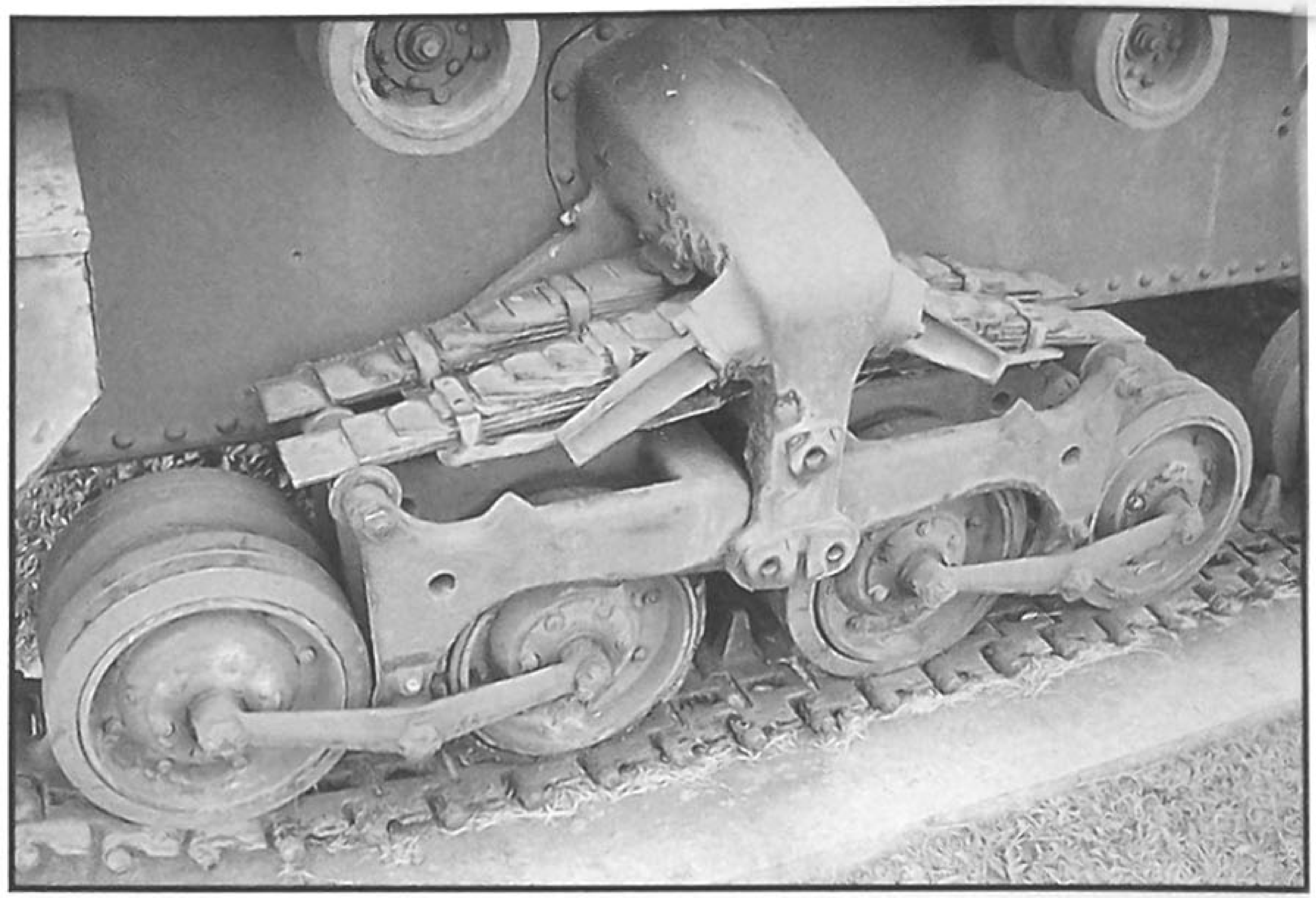


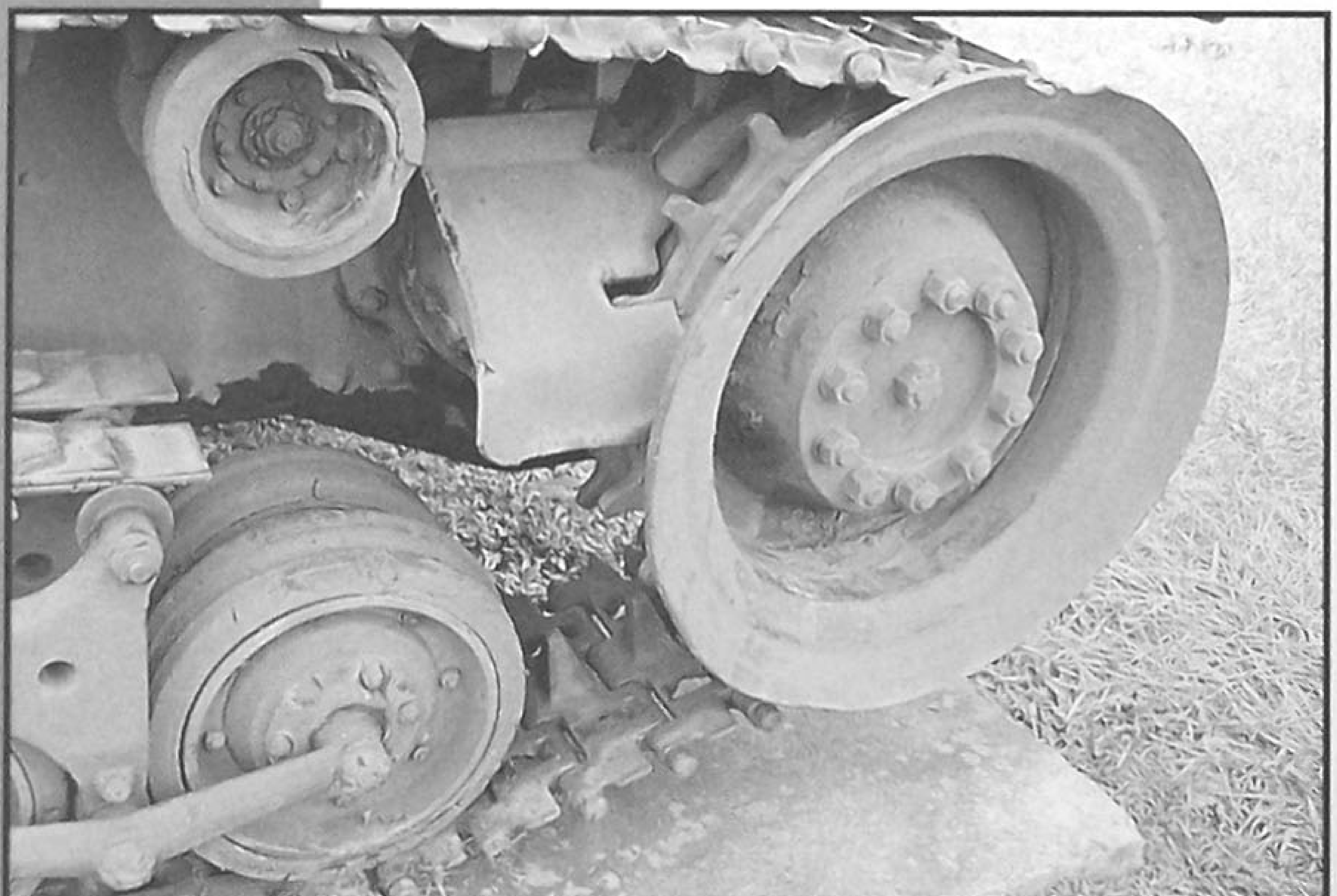




Top left: The driver's visor, now empty, normally held a piece of bulletproof glass, 50mm thick. The interior of the armored flap also held an episcope with 25° field of view. The position for the radio operator's 7.9mm MG is also seen. The gun could be fired either over open sights, or using a telescope installed in the radio operator's visor. The gun could also be locked in position and fired via a cable. In this position, the rounds would strike at a distance of 250 meters in front of the tank. **Top right:** A close-up of the 27cm dry pin tracks. **Above left:** The armor on the 35(t) was either bolted or riveted to the hull using special armored fasteners. **Above right:** The front dished and toothed idler wheel.

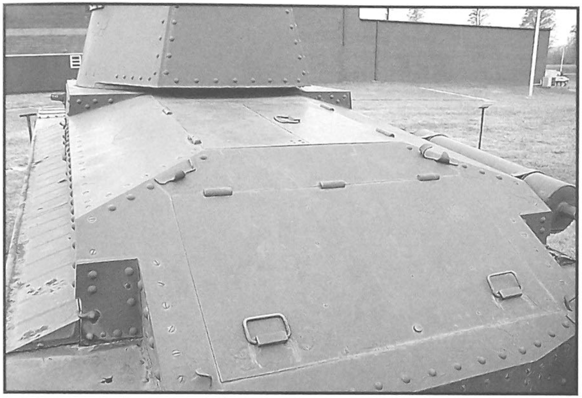


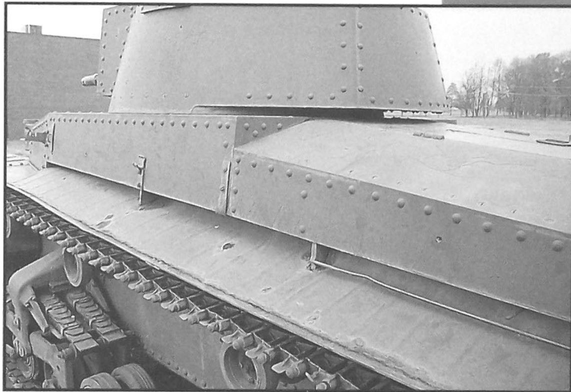


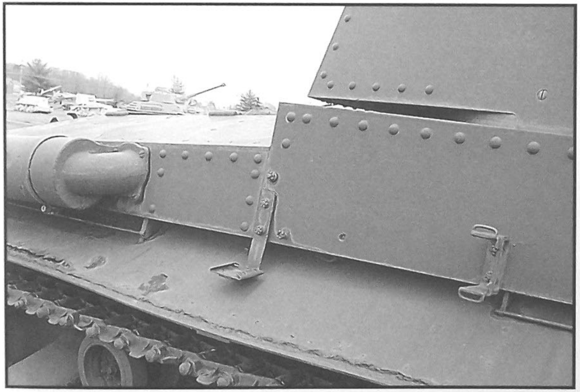




Top left: The front roadwheel was not sprung and it was installed in a fixed position. The locking box above it held track grousers. These could be installed on the tracks for extra grip in ice or snow. **Top right:** A closer view of the roadwheel frame. Twin sets of leaf springs were used on each frame. **Above left:** The rear drive sprocket. Each of the two sprockets had 19 teeth and each also had a mud scraper installed, as can be seen in this shot. **Above right:** An overall view of the rear of the tank. The rear armor on the 35(t) was 8mm thick and the engine hatch itself was 10mm thick.



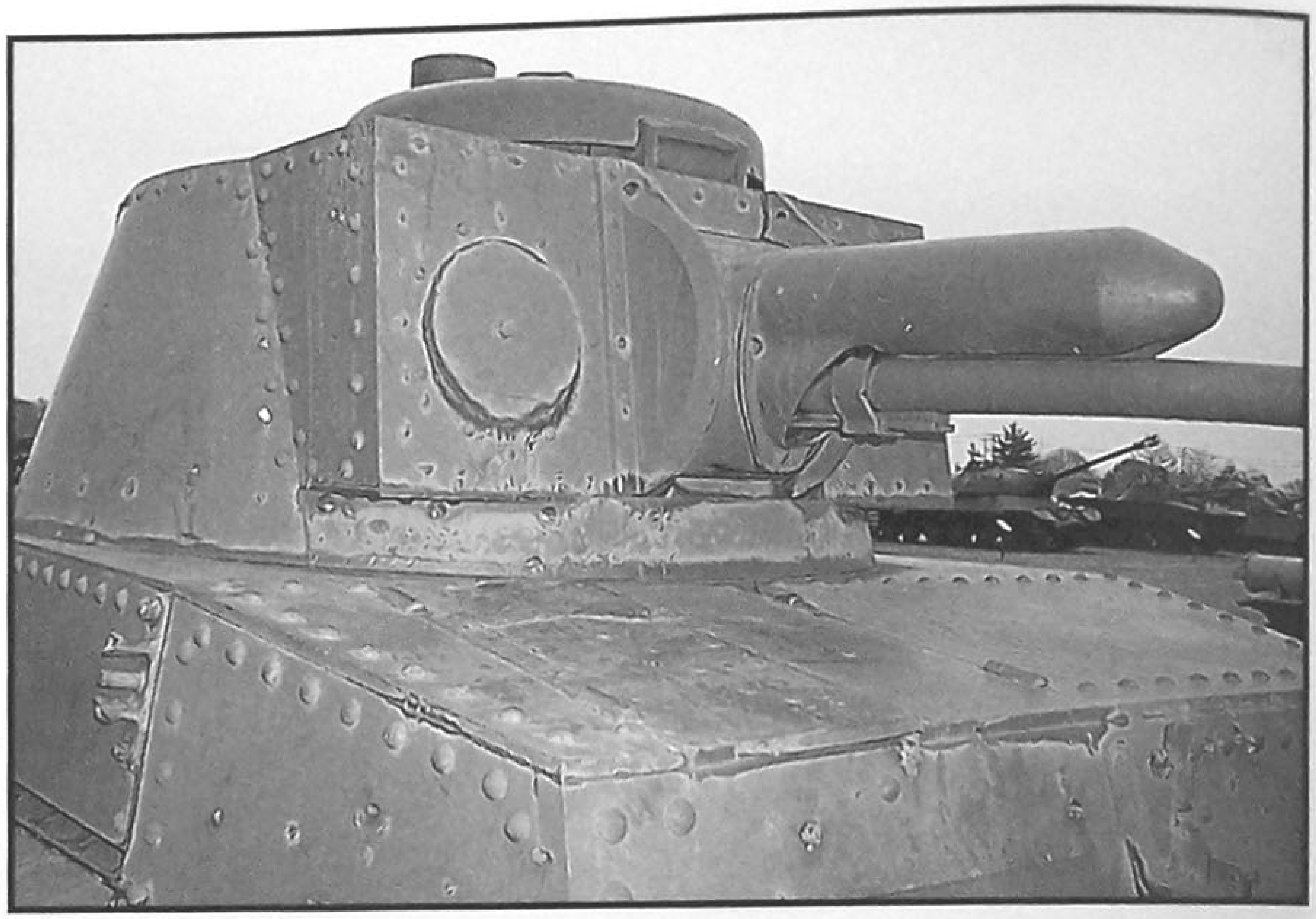


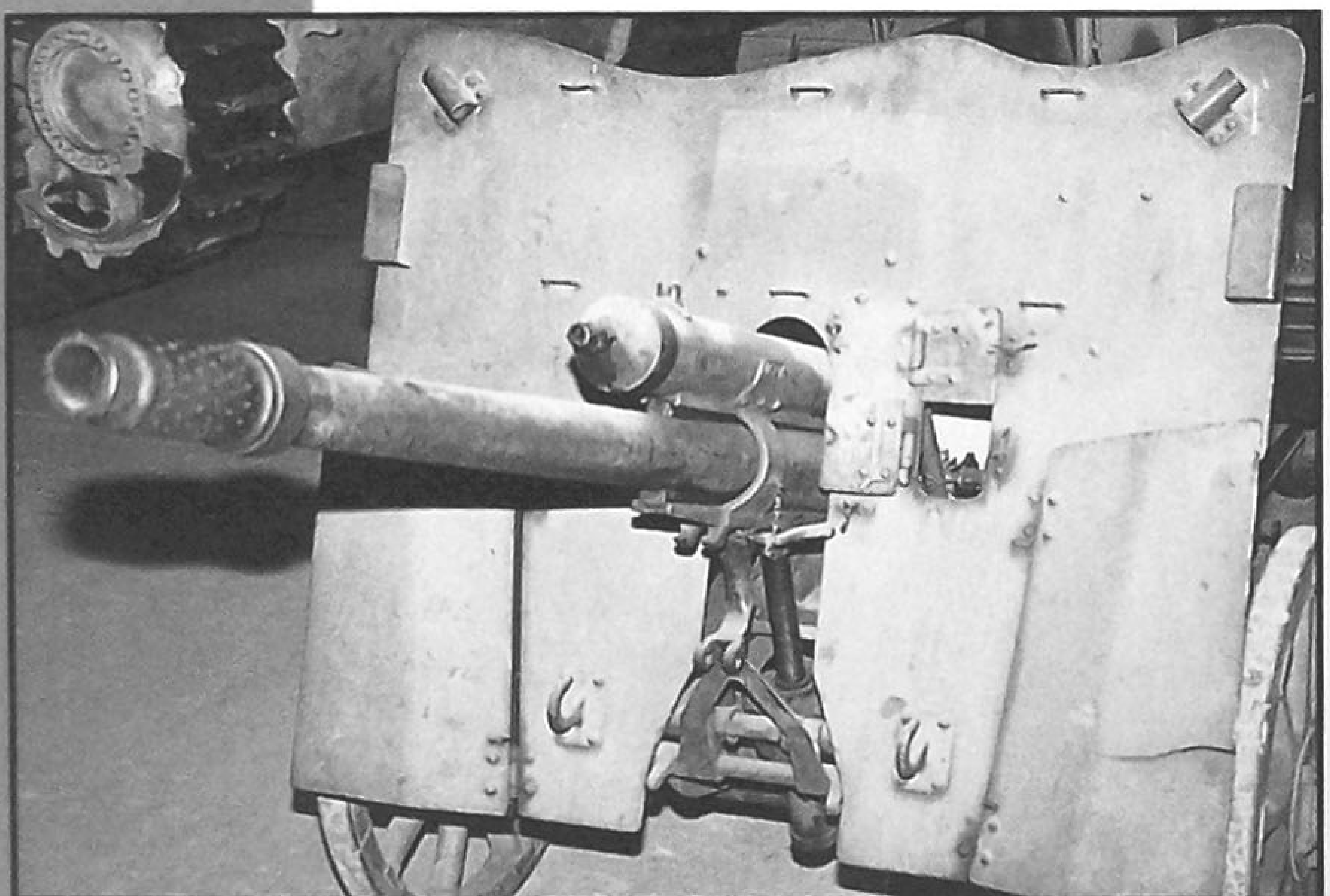


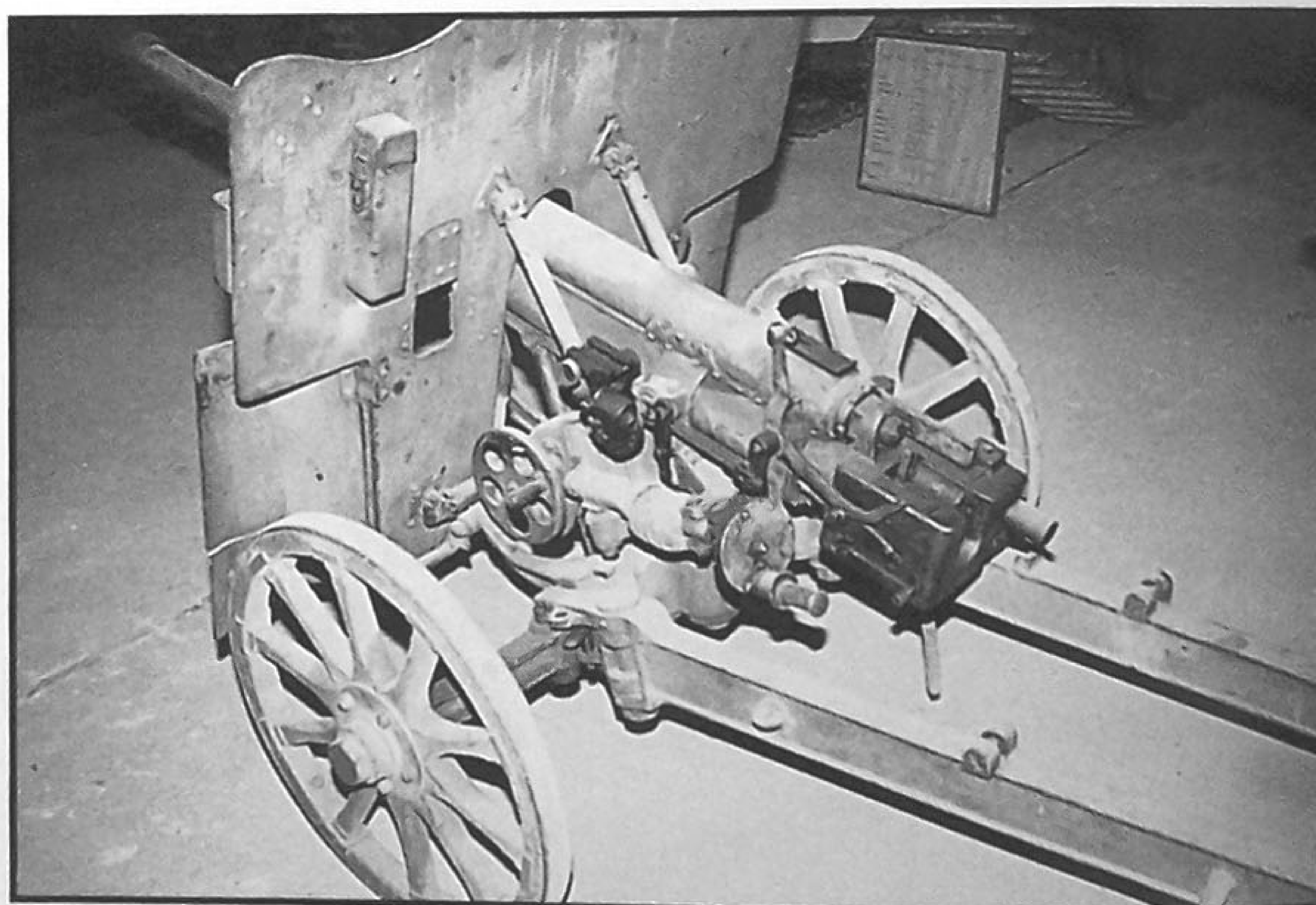


Top left: All of the armor on the 35(t) was designed to withstand rifle or machine gun rounds at distances over 75 meters. **Top right:** The vertical armor of the tank was 15mm thick, while the slanted armor plates were 12mm thick. **Above left:** At one time, these two brackets were part of the mount for the jack. **Above right:** the large muffler on the right rear of the hull. Visible in this photo is one of a series of small rods welded along the fender line. It is thought these rods are to attach external stowage.









Top left: An overall view of the main 3.7cm gun. This weapon was highly effective for its day. It could penetrate up to 45mm of vertical armor at 500 meters and 25mm of 30° armor at 1,000 meters. The weapon utilized a semi-automatic breech mechanism and this allowed it to reach a substantial rate of fire—up to 15 rounds per minute. **Top right:** The coaxially mounted 7.92-mm machine gun has been removed from the Aberdeen vehicle and a circular panel has been welded in its place. **Above left and right:** two views of the towed version of the 3.7cm gun on its wheeled carriage.

U.S. M3 "Lee" Medium Tank

The M-3 Lee started life on 13 June 1940 when the requirements for a new medium tank were issued. At the time, the only medium tank in U.S. Army inventory was the M2A1. This tank was armed with a 37mm gun and several .30 cals located around the hull. Due to events in Europe, it was realized that this tank would only serve a limited role in the upcoming conflict. It was also realized that a 75mm to equal the German Panzer IV 75mm short barrel was needed. Unfortunately, U.S. designers were not able to place such a large gun in the turret. They compromised by putting the 75mm in a sponson on the right side of the new chassis. The choice of the 75mm was rather odd, as it originally was a modified T6, an unsuccessful low velocity antiaircraft gun later designated the T7. The designers considered the 75mm gun as only a support weapon and not an antitank gun. Because of the obvious disadvantage of putting the main gun in a very limited traverse and elevation, the designers stacked extract weapons in two turrets on top of the hull. The first, main turret contained a 37mm gun, along with a coaxial .30 caliber machinegun. Another smaller turret with a .30 caliber for antiaircraft use was placed on top of the main turret. Two .30 caliber machineguns were also installed in the bow on the left



side. Production of the M3 took place starting in the late summer of 1941 at four plants. These were the American Locomotive Company, Detroit Tank Arsenal (Chrysler), Pressed Steel Car Company, and Pullman Standard Car Company. The last two built the British designed M3 Grant and the first two built the M3 Lee. Production continued until August of 1942 with a total of 4,924 of both types being produced. The tank weighed 31 tons and used a 400 hp Wright R975 EC2 air-cooled radial engine. It could move the tank from 21 to 24 mph on roads and had a crew of seven. **Above:** An early M-3 Lee. The two bow .30 caliber machineguns are one of the best early identification features. Also the riveted hull and the large access doors on the hull sides. The short-barreled 75mm gun, the M2 previously

designated the T7, was a modified antiaircraft gun, the T6. The second barrel looking apparatus below the 37mm gun in the larger turret is actually a counterbalance weight. This may be a prototype of the Lee since it also does not have the large boxes, which are found on the rear deck of the later version of the Lee. All these M3's look like they are going through their paces at a test ground, possibly Aberdeen. (NARA)

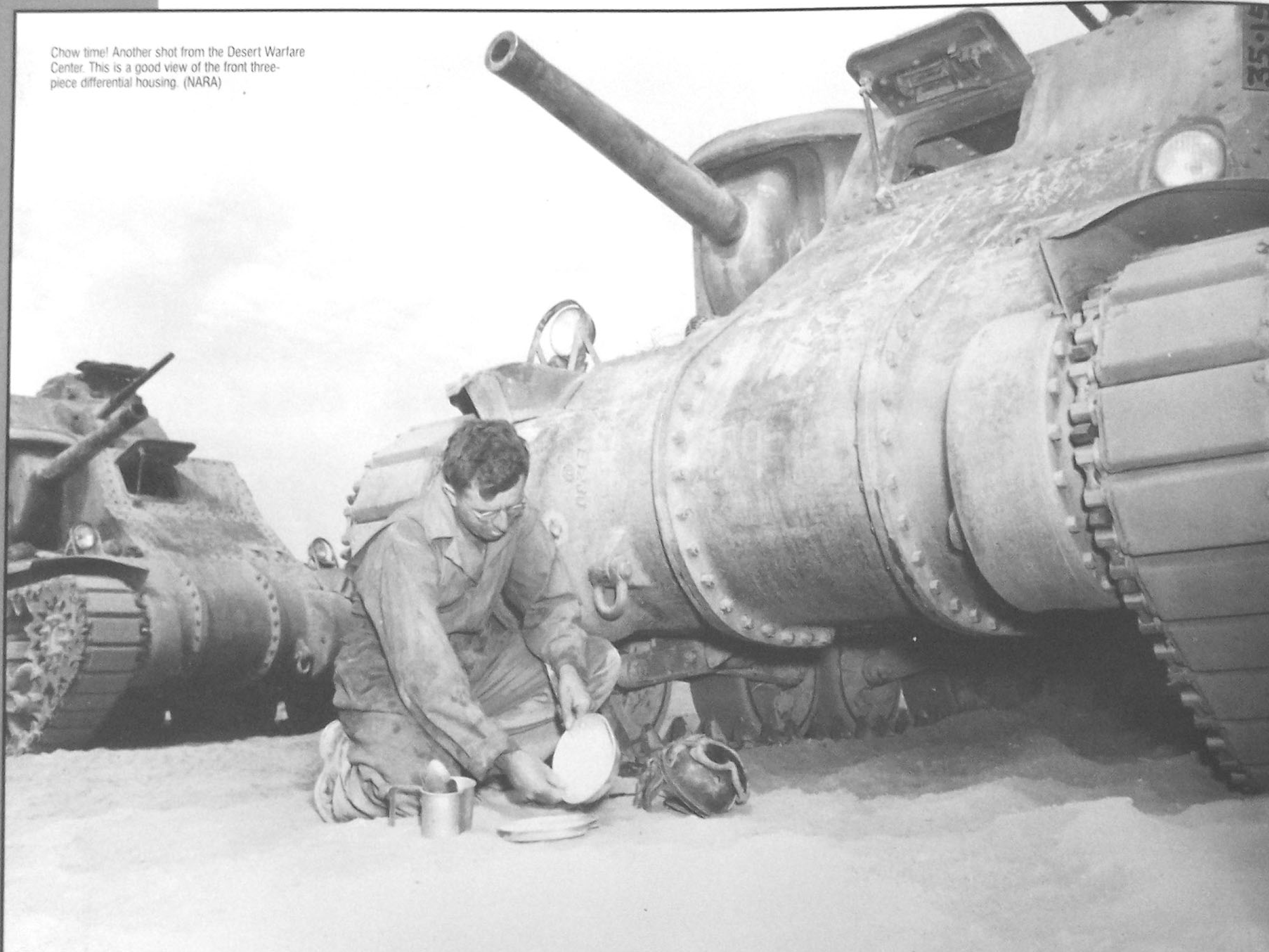






These two shots also depict early models because of the dual bow machineguns. They are seen during training at the Desert Warfare Center (present day NTC). The M3 Lee was considered as only a training tank in the US Army and any units deployed overseas were to get M4 Shermans as replacements. However, the 1st Armored Division was sent to Ireland with some of their original early production M3s and the 2nd battalion of the 13th Tank Regiment went to North Africa and later the 3rd Battalion. These M3 Lees do not have the counterbalance under the 37mm. Also clearly seen are the other two .30 caliber machineguns. One in the top turret and the coaxial mounted one next to the 37mm gun. (NARA)





Chow time! Another shot from the Desert Warfare Center. This is a good view of the front three-piece differential housing. (NARA)



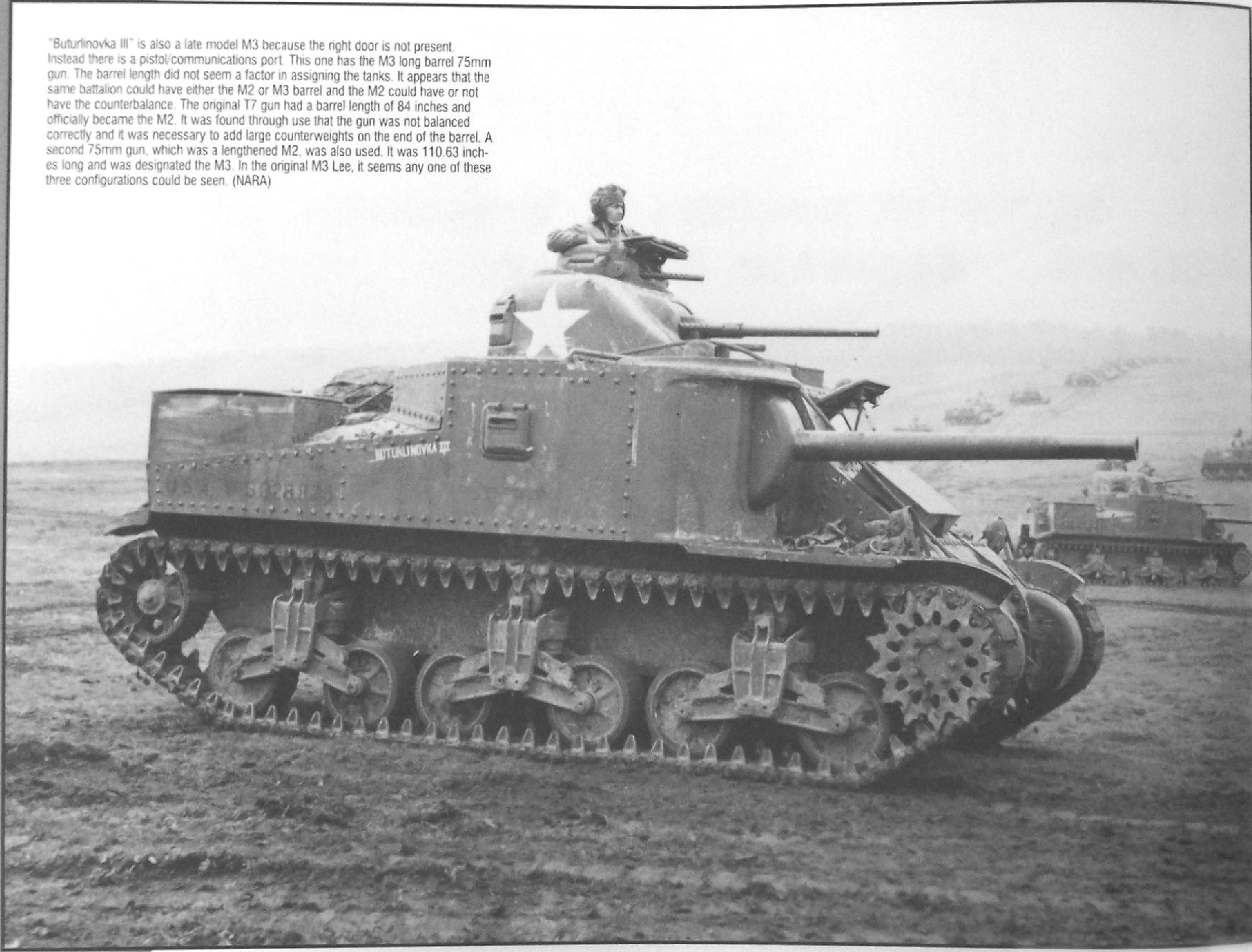
Perhaps dealing with the after effects of chow time? The GI on the left is the same one in the previous photo. Notice the name "Bingo" on the side of the M3 and the blue registration numbers. This is also a good view of the original type of suspension called the Vertical Volute Suspension System or VVSS with the return roller mounted centered over the open-spoke roadwheels. (NARA)



"Baseball" is a short barrel early production model M3. The counterweights around the 75mm gun to compensate for the shortened length of the gun can be seen. These counterweights were bolted on items, so they can either be present or not. The top is off the box on the front revealing the spare track links. (NARA)



This is an early model M3 belonging to the 2nd armored Division. This photo may have been taken at Fort Benning in February 1942 during exercises there. The Army Air Corps emblem was adopted by the 2nd for a short time. It is actually the reversed color insignia of the Air Corps. The large background circle is red, white star with a small blue dot in the center. Later, everything except the white star was dropped. Note the presence in the background of an early 2.5-ton GMC, 1/2-ton Dodge and MB Jeep. (Paul Gilbert)



"Buturlinovka III" is also a late model M3 because the right door is not present. Instead there is a pistol/communications port. This one has the M3 long barrel 75mm gun. The barrel length did not seem a factor in assigning the tanks. It appears that the same battalion could have either the M2 or M3 barrel and the M2 could have or not have the counterbalance. The original T7 gun had a barrel length of 84 inches and officially became the M2. It was found through use that the gun was not balanced correctly and it was necessary to add large counterweights on the end of the barrel. A second 75mm gun, which was a lengthened M2, was also used. It was 110.63 inches long and was designated the M3. In the original M3 Lee, it seems any one of these three configurations could be seen. (NARA)



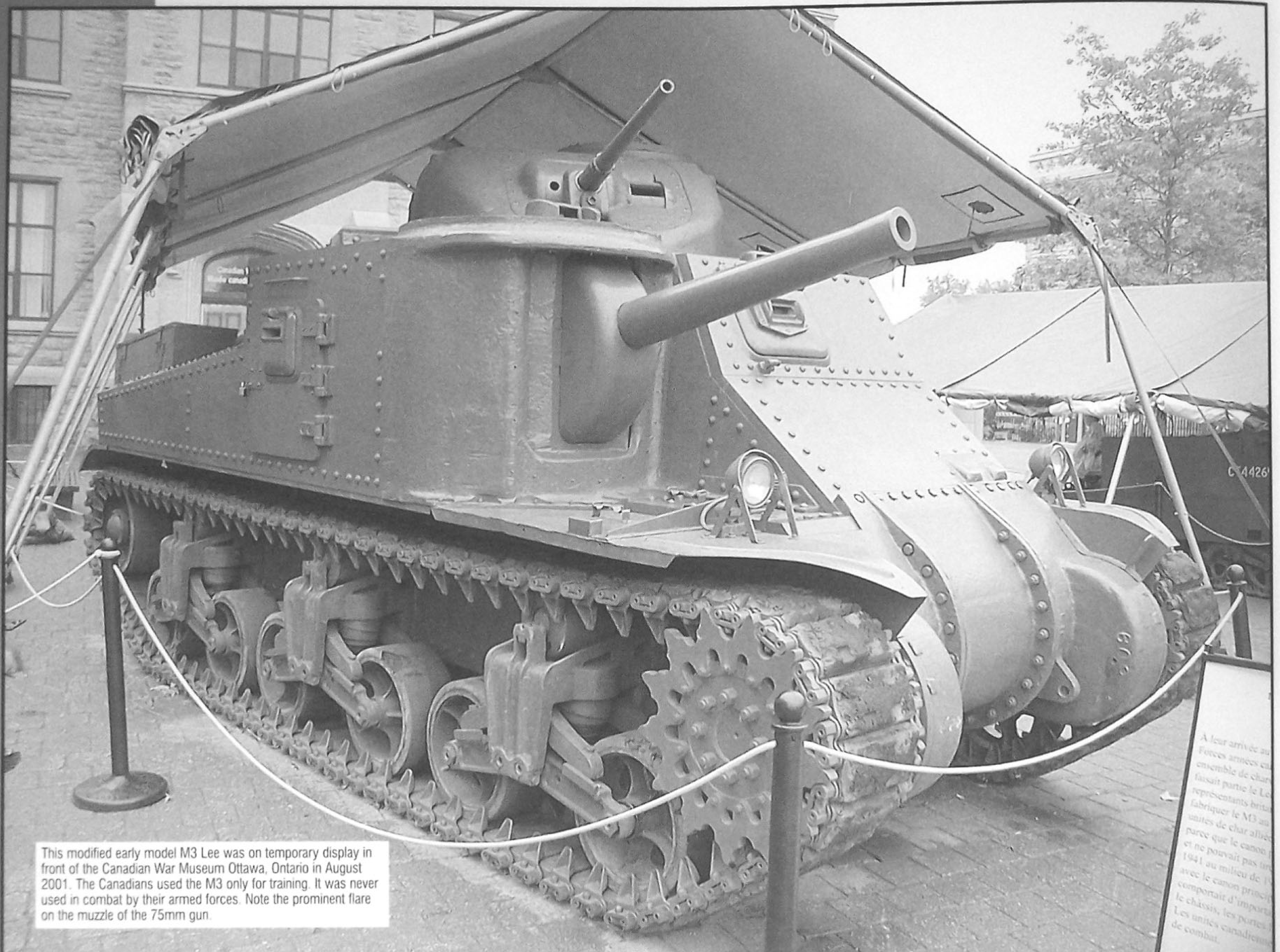
The following several photos were all taken in the same location. This is the 1st Armored Division after it deployed to UK where it trained until it was shipped to Tunisia. The date is December 5th, 1942 and the location is Perham Downs. "Buccaneer" is a late model M3. The door on the left side was not part of the production at this time. Note the use of the signal flag to communicate with other tanks. (NARA)



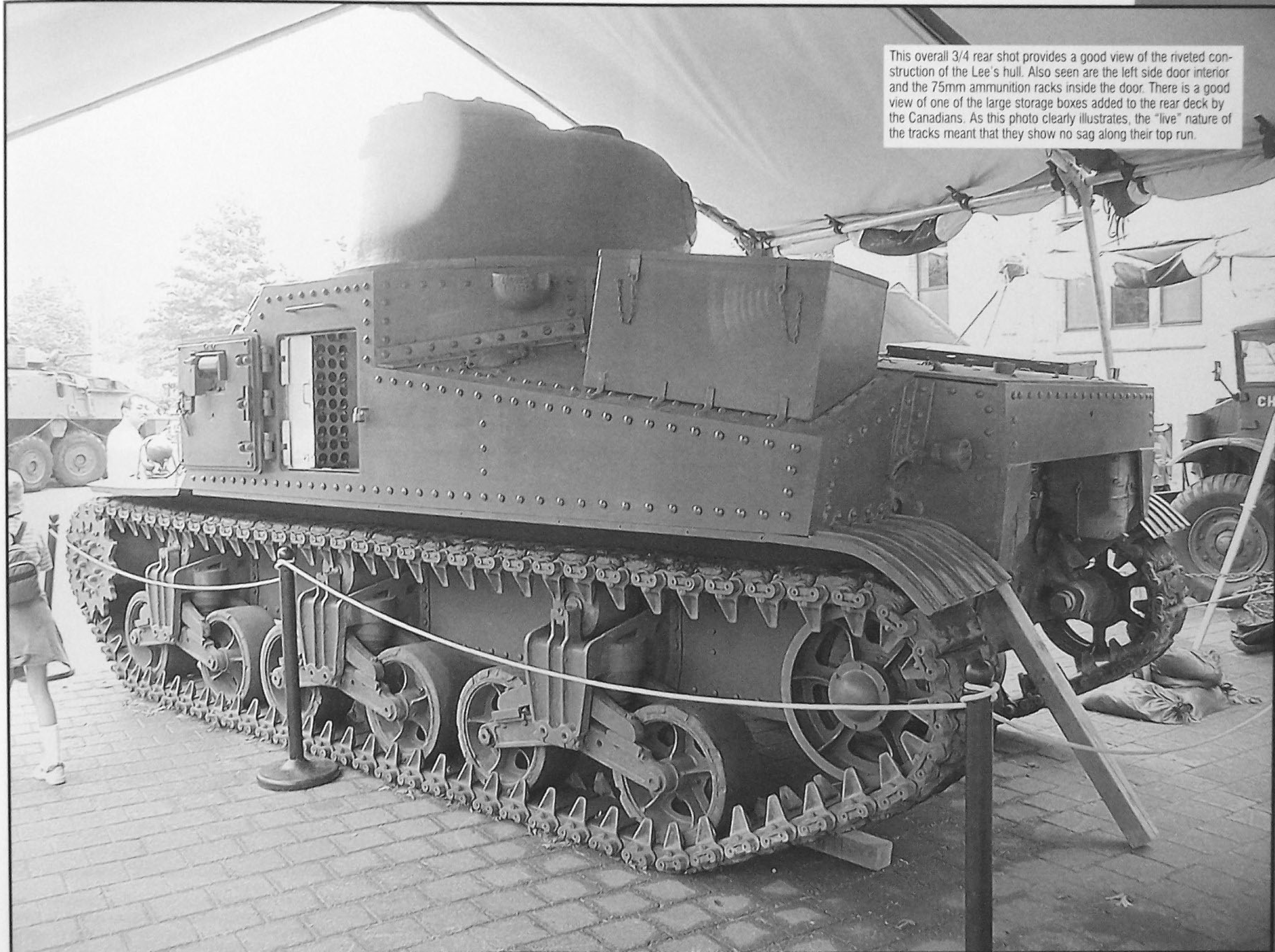
"Buccaneer" again. This time we can see that it too has the long barrel 75mm M3 gun. Also, the extra storage box on the front plate for spare track links can be seen. This box appears on all but the earliest versions. Santa and his Thompson have made an appearance. This series of photos was taken just before Christmas in 1942. (NARA)



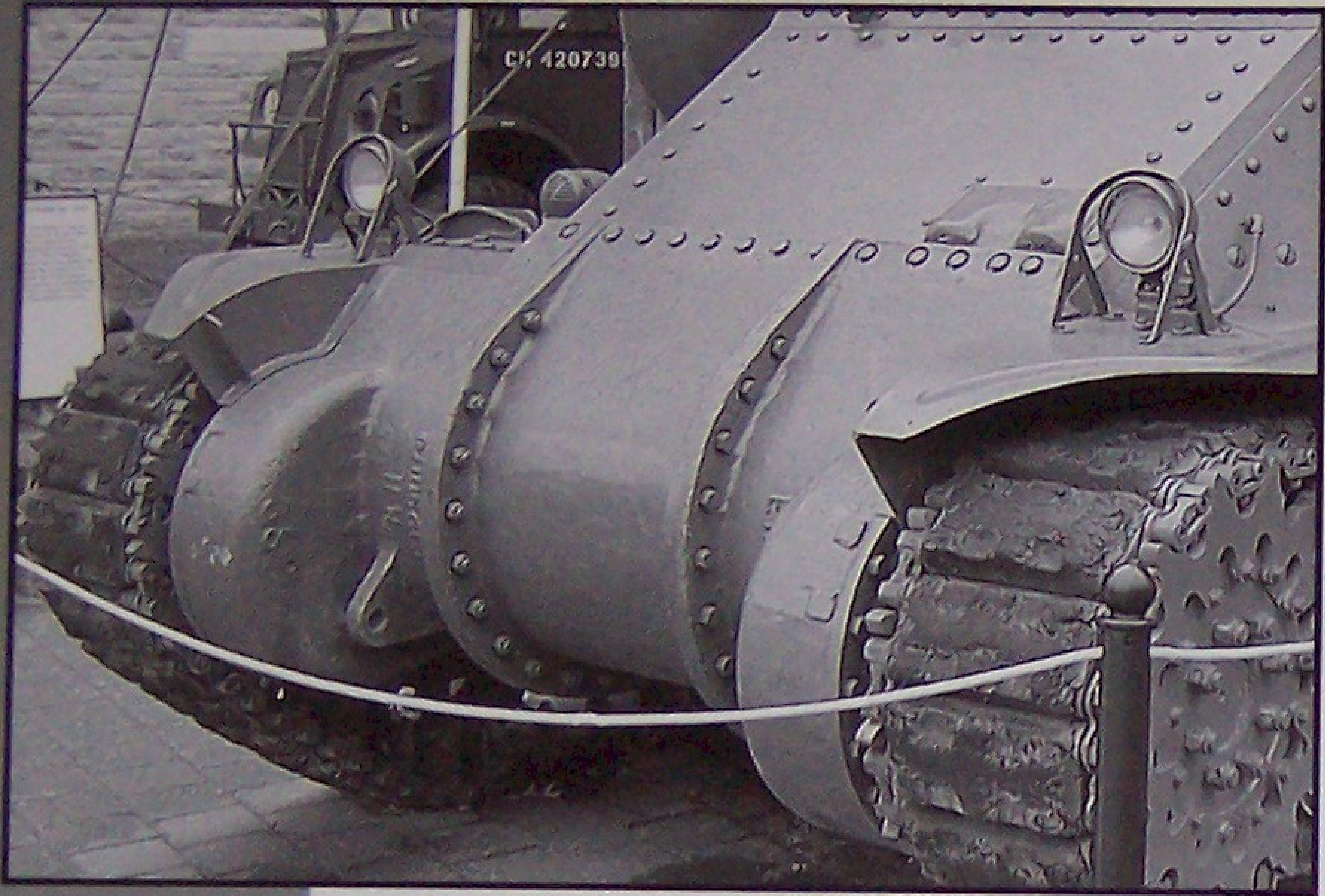
Another late production M3 with the long barrel 75mm gun. Oddly, the censor has tried to remove the stars on the turret. This is strange, as one can clearly see it on the other tanks. (NARA)

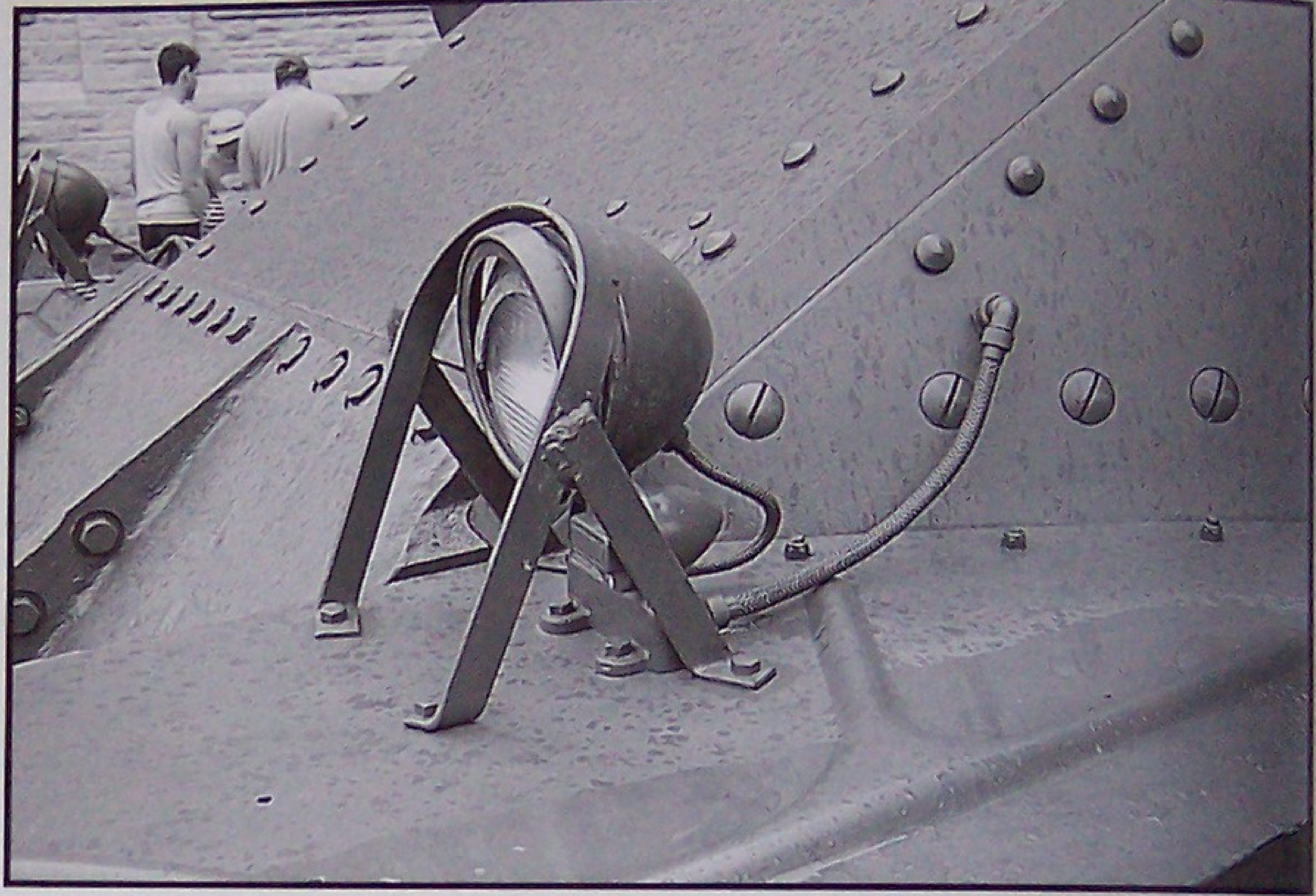


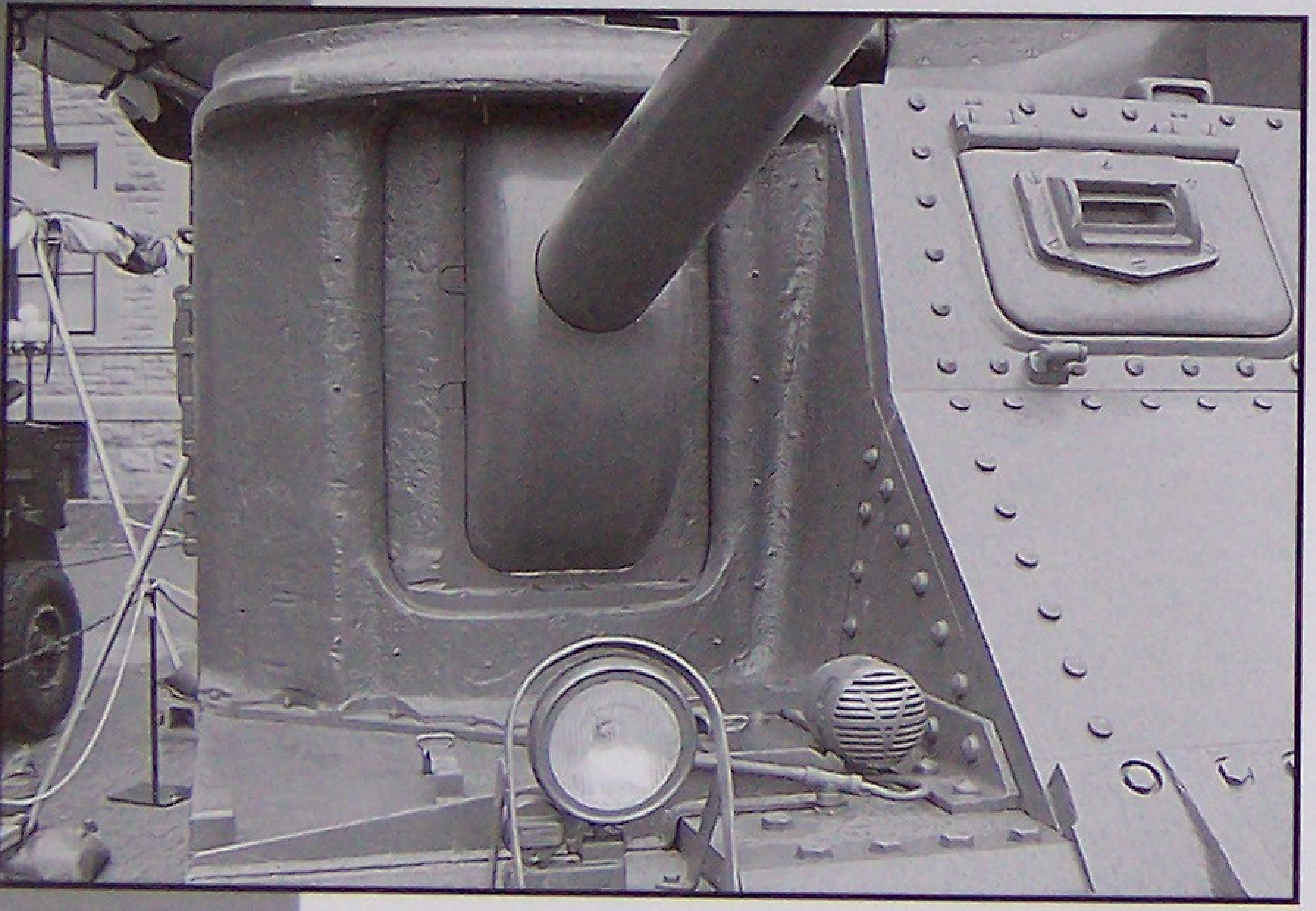
This modified early model M3 Lee was on temporary display in front of the Canadian War Museum Ottawa, Ontario in August 2001. The Canadians used the M3 only for training. It was never used in combat by their armed forces. Note the prominent flare on the muzzle of the 75mm gun.

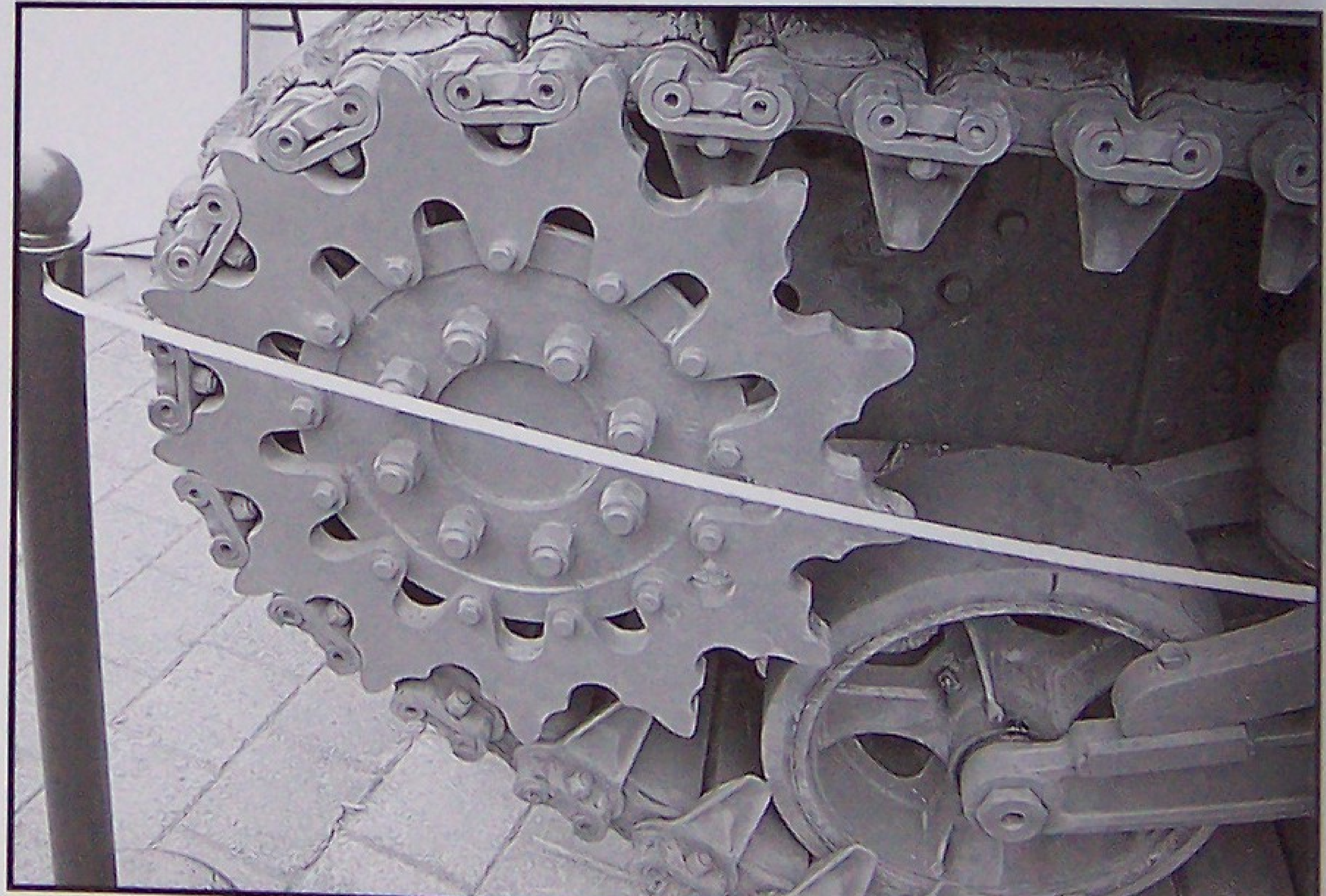


This overall 3/4 rear shot provides a good view of the riveted construction of the Lee's hull. Also seen are the left side door interior and the 75mm ammunition racks inside the door. There is a good view of one of the large storage boxes added to the rear deck by the Canadians. As this photo clearly illustrates, the "live" nature of the tracks meant that they show no sag along their top run.

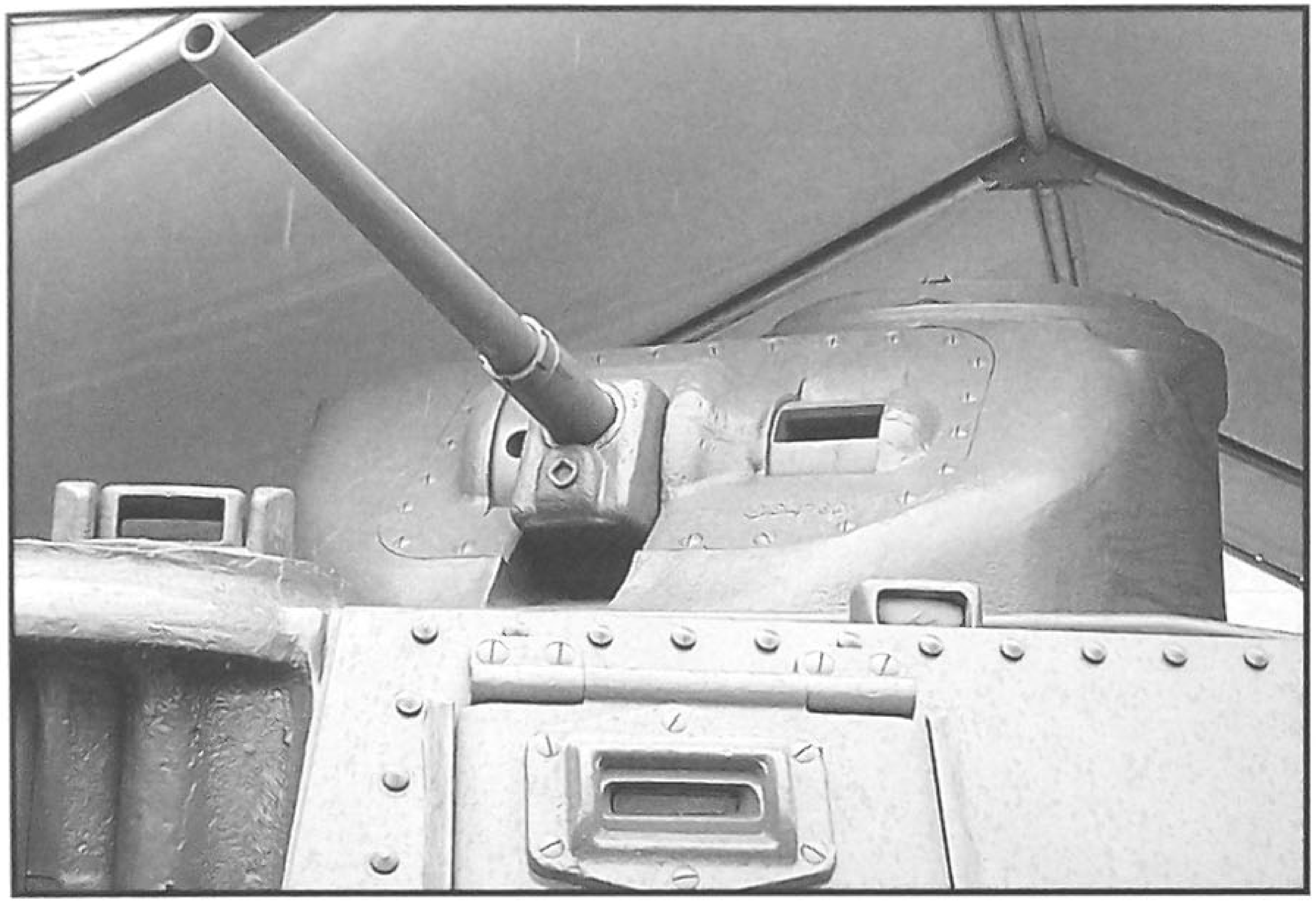


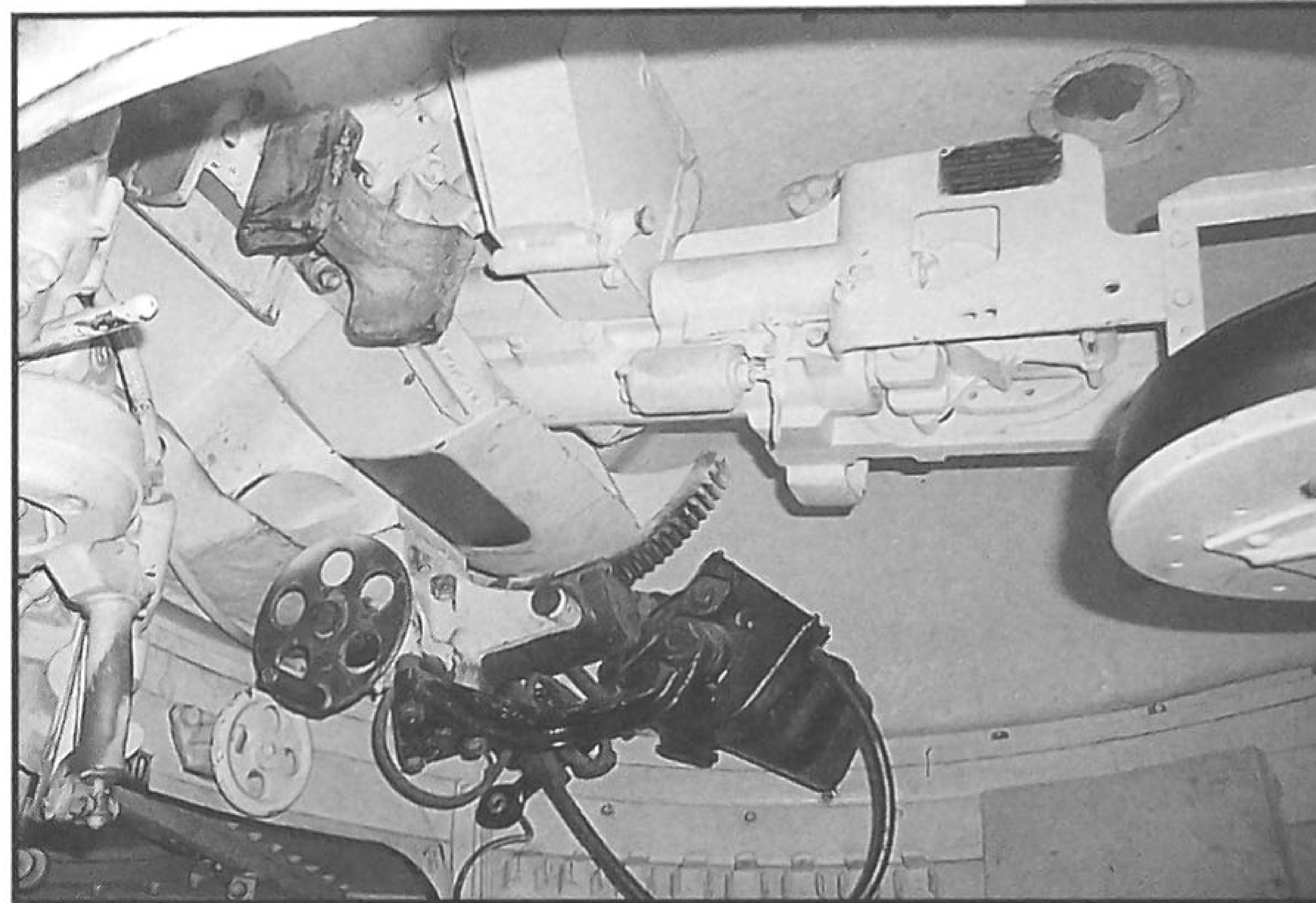


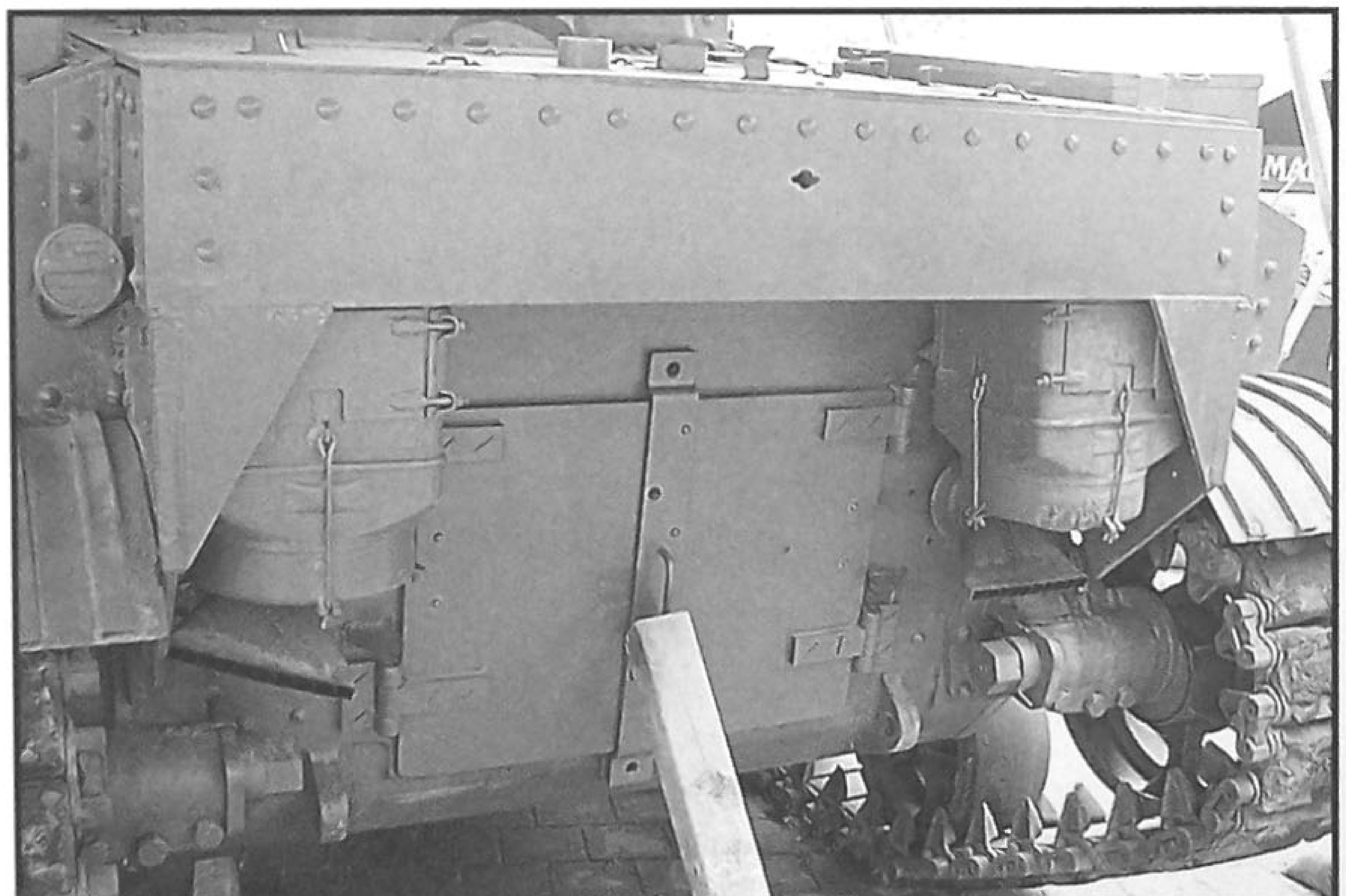


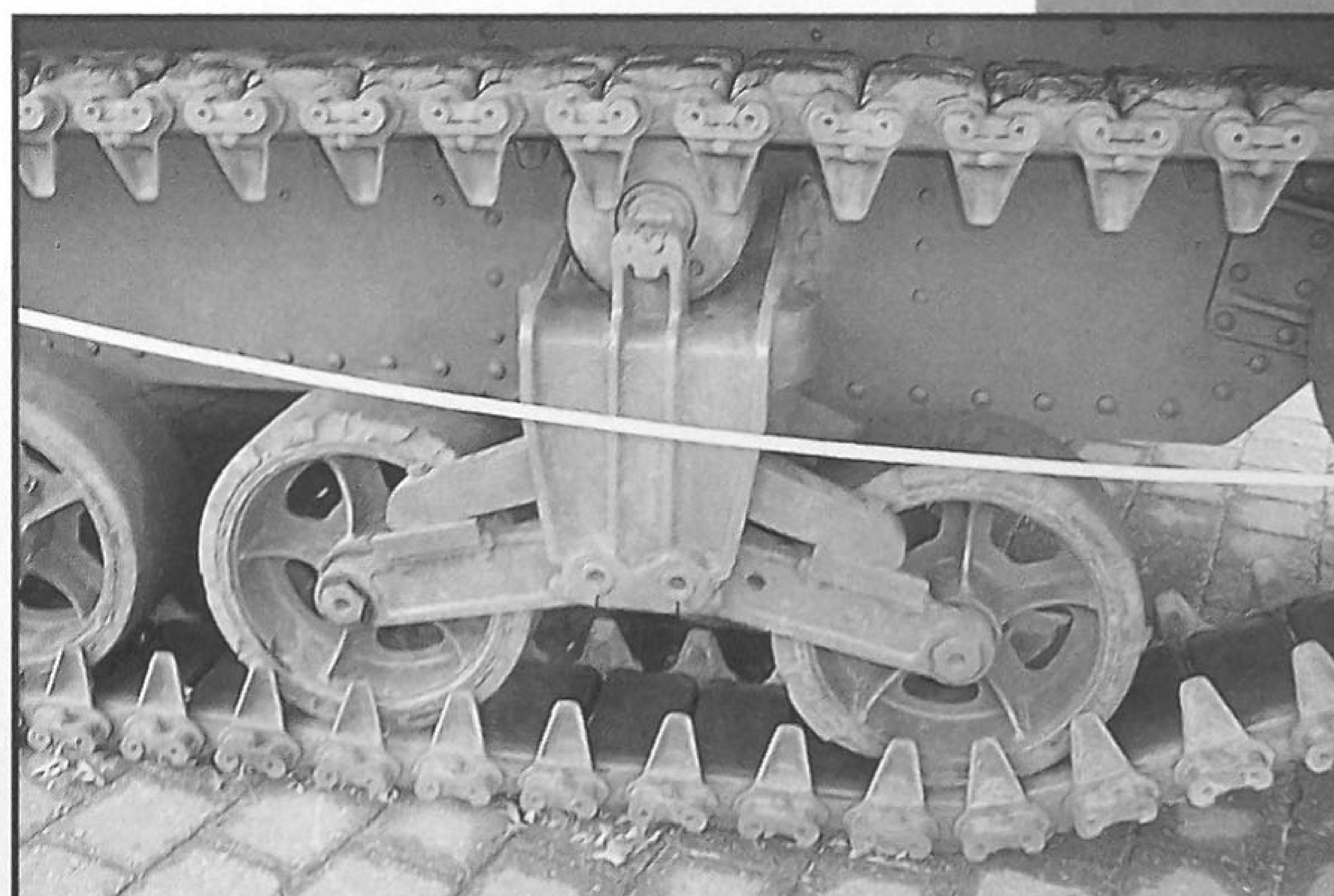


Top left: The dual machinegun openings in the front hull have been sealed with armored plugs. This view also gives an excellent perspective of the distinctive three-piece transmission housing. **Top right:** The left front fender and headlight wiring detail. The light appears to be a replacement, as it does not fit its housing properly. Note how the corner of the transmission housing is chamfered. **Above left:** An overall view of the cast housing for the 75mm gun on the right side of the tank. The right fender detail can also be seen here. Although the mounts are present, the machinegun tripod and ax head are both missing. **Above right:** The early "fancy" style version of the drive sprocket would have been common on this tank. Perhaps it was switched to this later style due to damage and/or wear.









Top left: The top machinegun turret has been removed and replaced with a Sherman style split hatch. The casting texture on the turret and the 75mm gun mount also are evident in this photo. **Top right:** Looking up at the 37mm gun in the turret, the breech and the elevation wheels can clearly be seen. The gunner's sight is missing on this example. **Above left:** This Lee uses the later canister style exhaust system seen on the Sherman. The large double access doors are also seen on several types of Shermans. **Above right:** This is a good view of the original type of suspension called the Vertical Volute Suspension System or VVSS with the return roller centered over the open-spoke roadwheels. The rubber on the roadwheels has taken a considerable beating over the years.

Sturmgeschütz at the Front

The development and deployment of the Sturmgeschütz was a very unique aspect of the history of modern weaponry. The role of the Sturmgeschütz was envisioned to be a mobile support weapon capable of assisting infantry in overcoming difficult obstacles. The Germans employed this concept with devastating effectiveness throughout World War II. Even though the Sturmgeschütze's role changed as the war progressed, the Germans were still the most deadly employers of the mobile assault gun. Unlike other modern armies, the Bundeswehr continued the development of the "StuG" with the modern Marder and even created some highly experimental double-barreled models. The role of the infantry assault gun was eventually overshadowed by the appearance of infantry fighting vehicles (IFVs) such as the Bradley and the Warrior. The Germans first conceived this role of the Sturmgeschütze in the twenties and thirties when they began experimentation with a variety of artillery pieces mounted on tracked chassis. The idea was further expanded and the concept narrowed, when an unarmored superstructure was mounted on the chassis of the then new Panzer III C. This was designated the Sturmgeschütz "O." Contrary to some earlier accounts this vehicle was never armored, the superstructure being constructed of mild steel. Of course the vehicle never saw combat, yet it remained an important training aid. It became clear during the Polish campaign that the program of assault artillery should be fulfilled. Further development led to the first of the Sturmgeschütz models, the Ausf. A. The A was based on the chassis of the Panzer III E. Only eight of the new vehicles were produced and they were all sent to the first of the Sturmalbeitungs, .16 Sturmbatterie of Infantry Regiment Grossdeutschland. This small unit was both trained and deployed with its small complement of StuGs. They saw their first combat in France in support of I.R. GD and, although their role was minuscule in relation to the rest of the weapons employed, the lessons learned would prove to be invaluable in later campaigns. As the war progressed, the role of the Sturmgeschütz began to change. The vehicles were increasing called upon to deal with enemy armor. Subsequent weapons upgrades and automotive improvements led to the StuG B, C/D, E, F and G. At war's end, many Panzer regiments were supplemented with Sturmgeschütz to make up for the shortage of tanks.



This StuG B can be recognized by the ribbed inner aperture on the left side of the upper hull. It is seen in Russia during the summer of 1941. This vehicle carries two sizable unditching logs on either side of the hull. A complete eight-man heavy MG platoon comes along for the ride. (BA)



This StuG C/D can be recognized by the absence of the sighting aperture on the left side of the hull. The only external difference in the Ausf. C and D models was the installation of the key locks on the glacis hatches on the Ausf. C. (BA)



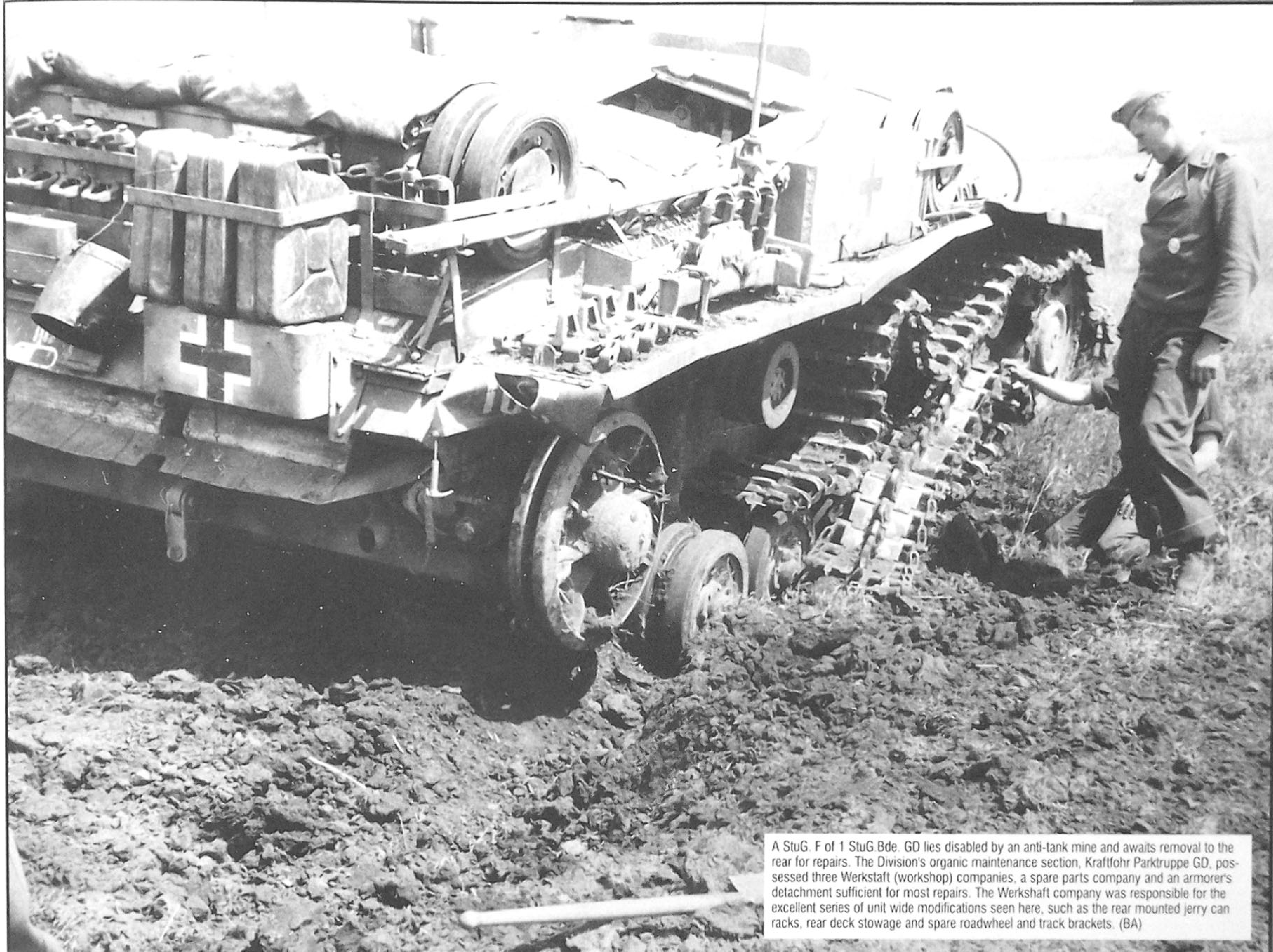
This StuG E and its crew await their orders at a port in southern Greece. The Ausf. E can be recognized by the large square boxes on either side of the upper superstructure. These were provided to accommodate the installation of new radio sets. (BA)



An excellent rear view of a StuG C/D. The armored cover for the rear mounted smoke candle array was introduced on the Ausf. B. The installation of sheet metal exhaust deflectors is of interest. (BA)



A Gefreiter from the Kradschutzen battalion of the Panzergrenadier Division Grossdeutschland pauses to share a joke next to a StuG F of the StuG Abt. GD. The vehicle number 16 indicates 1st Battalion, 6th StuG in the battery. Of interest are the jerrycans filled with water marked with the vehicle number and the empty shell cases. Empty shell cases, unused or faulty ammunition, as well as packing cases were collected by the division's logistics personnel and sent back to supply dumps to be returned to Germany. Also note the track pins stowed on the hull near the spare roadwheel and the accumulation of the mud and grass in the suspension system. (BA)



A StuG. F of 1 StuG.Bde. GD lies disabled by an anti-tank mine and awaits removal to the rear for repairs. The Division's organic maintenance section, Kraftfohr Parktruppe GD, possessed three Werkstaft (workshop) companies, a spare parts company and an armorer's detachment sufficient for most repairs. The Werkshaft company was responsible for the excellent series of unit wide modifications seen here, such as the rear mounted jerry can racks, rear deck stowage and spare roadwheel and track brackets. (BA)



Watched by officers of Panzertruppe GD, a Sturmgeschutz F of StuG. Abt GD moves on a corduroy road constructed around a railway track along the Don. The vehicle in this photograph shows that both the area over the driver's roof and the right front extension roof have been filled in with a layer of concrete to improve the ballistic shape and afford better protection. (BA)



This StuG F has several interesting identifying features. The 30mm plates welded to the front denote an August 1942 production vehicle. Note the design of the plates, notched on the hull to accommodate the older style towing shackles and segmented around the driver's visor to accommodate the driver's periscope. Wider "Winterketten" tracks have been installed on this StuG for greater floatation on the snow. (BA)



Several major and important changes were made to the StuG with the introduction of the Ausf. G. Most notably as seen here, is the redesigned and better-sloped superstructure, the addition of a commander's cupola with seven periscopes, and the installation of the large armored panel on the very rear of the hull. The location of the fume extractor vent on the rear of the superstructure indicates that this StuG was manufactured after April 1943. (BA)



These Ausf. Gs move down a road in central Russia during the winter of 1943-44. Besides GD, many other units provided large, elaborate stowage boxes for the rear hull. Sometimes these were simply an improvisation by the crew. The large bins are also seen on certain Panzer IIIs. The tank in the foreground has a spare wheel mounted on the rear hull and several lengths of spare tracks stowed around the hull. (BA)



The vehicle seen here and on the next page is most likely from the April or early May 1943 production. The identifying feature is the installation of the 30mm plates to the front hull. These plates were dropped by May of 1943, when the front armor panel was increased to 80mm.



Of special interest on this StuG is the installation of spare roadwheels and brackets on both sides of the upper superstructure. This has necessitated feeding the tow cables through the center of each roadwheel, rather than flat on the fenders as was standard. Also note the row of later style solid tooth track links on the front of the hull. (BA)



Dating this particular vehicle is difficult because so many of the identifying features are obscured by exterior stowage. It does have a rather scruffy coat of Zimmerit paste applied to the hull that would indicate a vehicle produced prior to the factory introduction of the coating in September 1944. It is liberally covered with spare track links, no doubt added in this case as extra armor. Two posts have been welded to the upper part of the roof to accommodate additional lengths of links. The Schurzen side skirts are the solid panel Panzer III style, rather than the laminated style common to StuGs at this time. (BA)



A line of early StuG Gs moves down a road during training in Holland during the first part of 1943. These vehicles have the more typical laminated armored side skirts and the 30mm bolted on armor plates. All of them appear to have an elaborate tarp system for the upper superstructure. The Sturmgeschütz was far from waterproof and unless combat actions prohibited it, these tarps would be close at hand. (BA)



This early G also sports the Panzer III style side skirts. Spare tracks have also been attached to the hull, just forward of the commander's cupola. It is thought that this is a training exercise, note the all-weather tarp and the opened transmission access hatch. It opened more or less over the driver's legs and was a welcome source of additional ventilation for the crew. (BA)



This G model was manufactured without the 30mm bolt-on plates on the front hull and without the commander's cupola deflector. These factors and the presence of factory applied Zimmerit indicate a September 1943 production vehicle. The square pattern Zimmerit is indicative of the manufacturing firm of Miag. Note the sun shield extensions on the commander's scissors scope. (BA)



Interestingly, this mid-production StuG G has the welded version of the gun mantlet with the hole for the coaxial MG. This was introduced into production in June of 1944, but lacks the commander's cupola deflector. This puts its production date sometime between June and October of 1944. Note the unusual pattern of camouflage on the side skirts and the two vehicle "mascots." (BA)



This late August production StuG G is seen here being inspected by U.S. troops in Holland during the aftermath of the initial Operation Market Garden assaults on September 19, 1944. The vehicle has received dozens of hits to the front glacis plate, driver's visor and the muzzle brake. Note that the visor housing has been completely sheared away. The forward hull travel lock was introduced during July 1944 production. (NARA)



The "Topfblende" pot mantlet was introduced in November of 1944. Early examples, such as that seen here, did not contain a port for the coaxial MG. This StuG utilizes the second of three metal pattern return rollers first seen during the summer 1944 production. (BA)



Another, closer shot of the early November production vehicle. Note how the left track is slacking as the vehicle negotiates a right turn. The waffle iron pattern Zimmerit coating was indicative of the firm of Alkett. (BA)

These two menacing looking StuGs also lack the coaxial MG port in their Topfblende, indicating early November production for both. The nearest vehicle has a copious amount of spare tracks all over the hull, including an interesting three-link section strapped to the front right hull. (BA)





Men of the 28th Infantry Division search for souvenirs on an early November production StuG on November 24th 1944, making the service life of this vehicle pretty short. Unusually, the return rollers are a mixture of rubber rimmed and the late style steel type. This could be a rebuilt Sturmgeschütz, as there appears to be no evidence of the gun travel lock. (NARA)



At a rail yard in Rounen France, this StuG has been pressed into duty as a locomotive. The entire superstructure has been removed to facilitate this and without the additional weight, the vehicle was probably quite useful for its new task. A large U.S. style tow hook has been welded to the rear hull and presumably, some type of bumper has been added to the front hull. There is little left to help identify the manufacture date, other than the presence of the later production steel return rollers. This photograph was taken on February 19th 1945. (NARA)

U.S. Rockets in WW2



The effective use of the 4.5 rocket by the U.S. Army Air corps lead to several experiments to modify the launchers for ground use. The basic launcher used was the M10 4.5-inch Aircraft Rocket launcher. As the tubes themselves were only fastened together with simple straps, individual tubes were arranged on a variety of mounts. Here, a GI of the U.S. 7th Army loads a rocket into one such arrangement mounted on the back of a Jeep. Details of the mount are especially clear in this photo. (NARA)

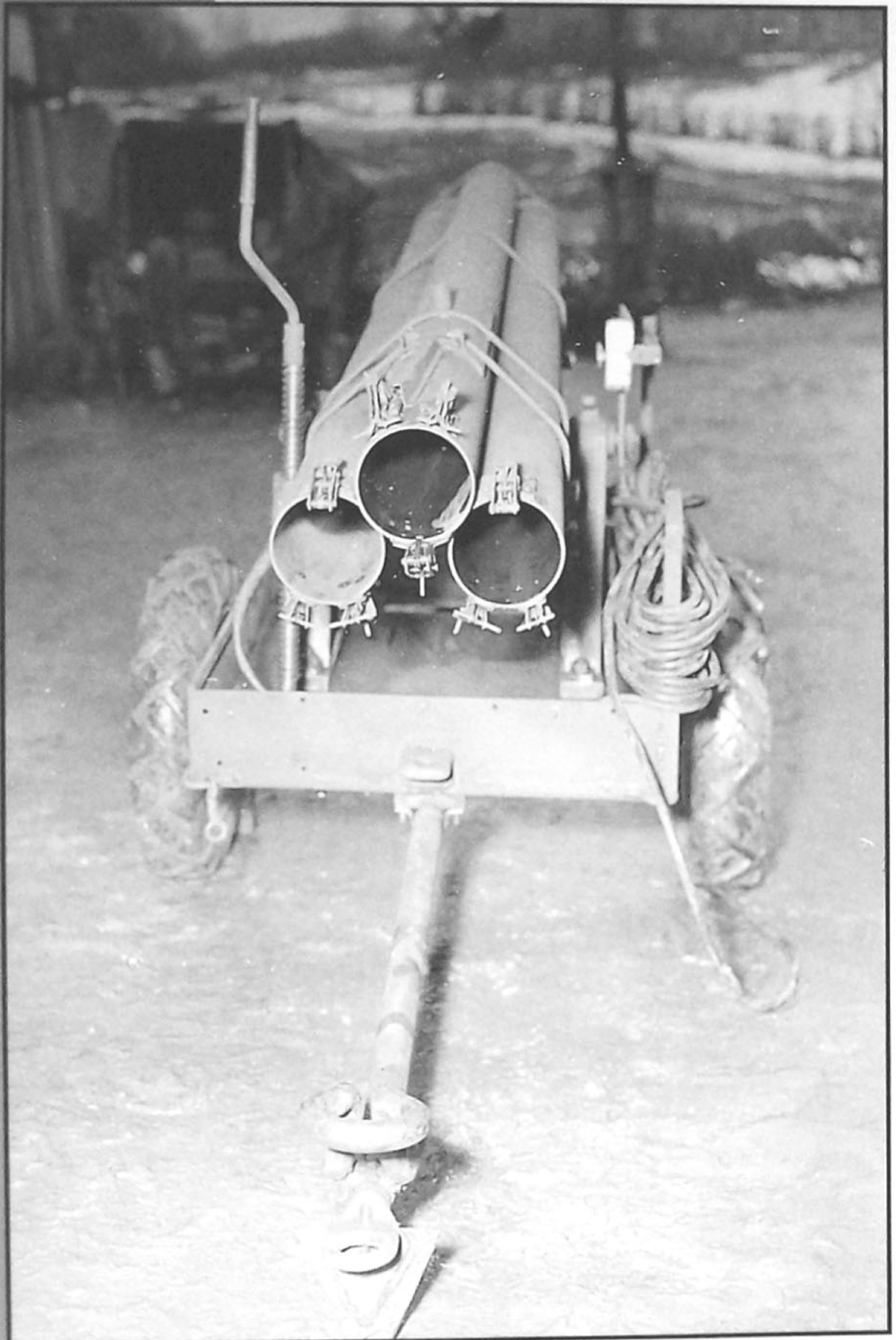


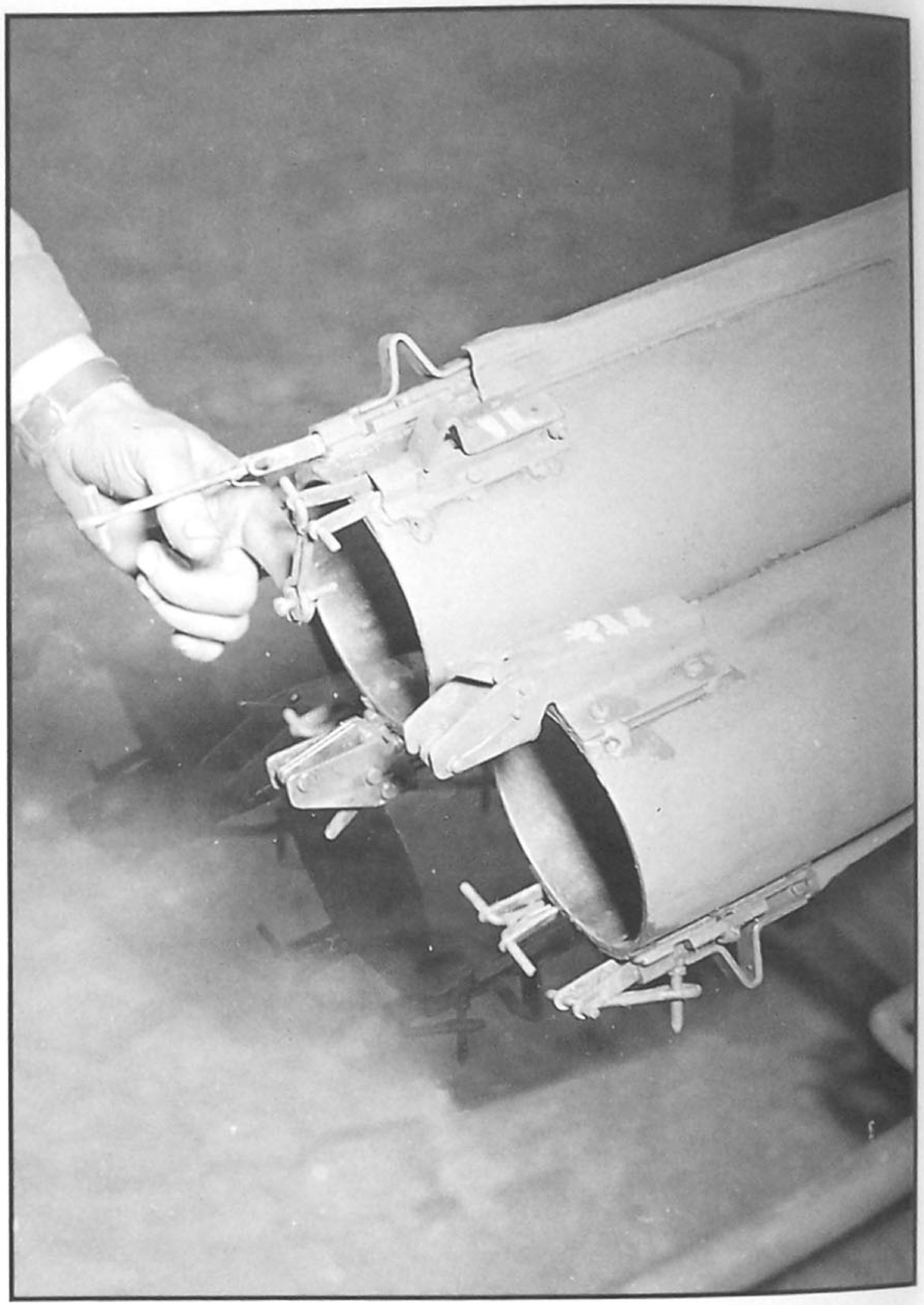


Above: a crew is setting the fuse on the rockets. There were four different types of rocket, M8, M8A1, M8A2 and M8A3. There were only minor differences in the various rounds and each was progressively more effective. These rockets each weighed approximately 38 pounds and had a 15-pound HE filling warhead. The range of the rocket was approximately 4,000 yards. **Right:** The M8 4.5-inch round was a fin-stabilized rocket. The fins open up after the rocket has left the tube. The fiber containers can be seen in the background. (NARA)



An overall view of the Jeep mounted launcher. An armored cowl has been constructed over the driver's compartment, but it is doubtful that the crewman would remain for the launch. The launcher seen here has a fixed traverse, but can be elevated up to 35 degrees. It is assembled from what appear to be 12 M14 rocket tubes. These were nearly identical to the M10 tubes, but were steel instead of plastic. (NARA)





These two photos are excellent illustrations of the basic M14 steel launcher array. This was the initial configuration of the experimental mount, with the array simply placed on an improvised trailer. The only thing missing here is the under wing mounting brackets. The rockets could be fired all at once or singly when mounted to the wing of an aircraft, but it is unclear if this function was enabled on this ground-mounted version. Note the electrical wire coiled around the trailer. The shot above provides a close-up of the firing mechanism. (NARA)



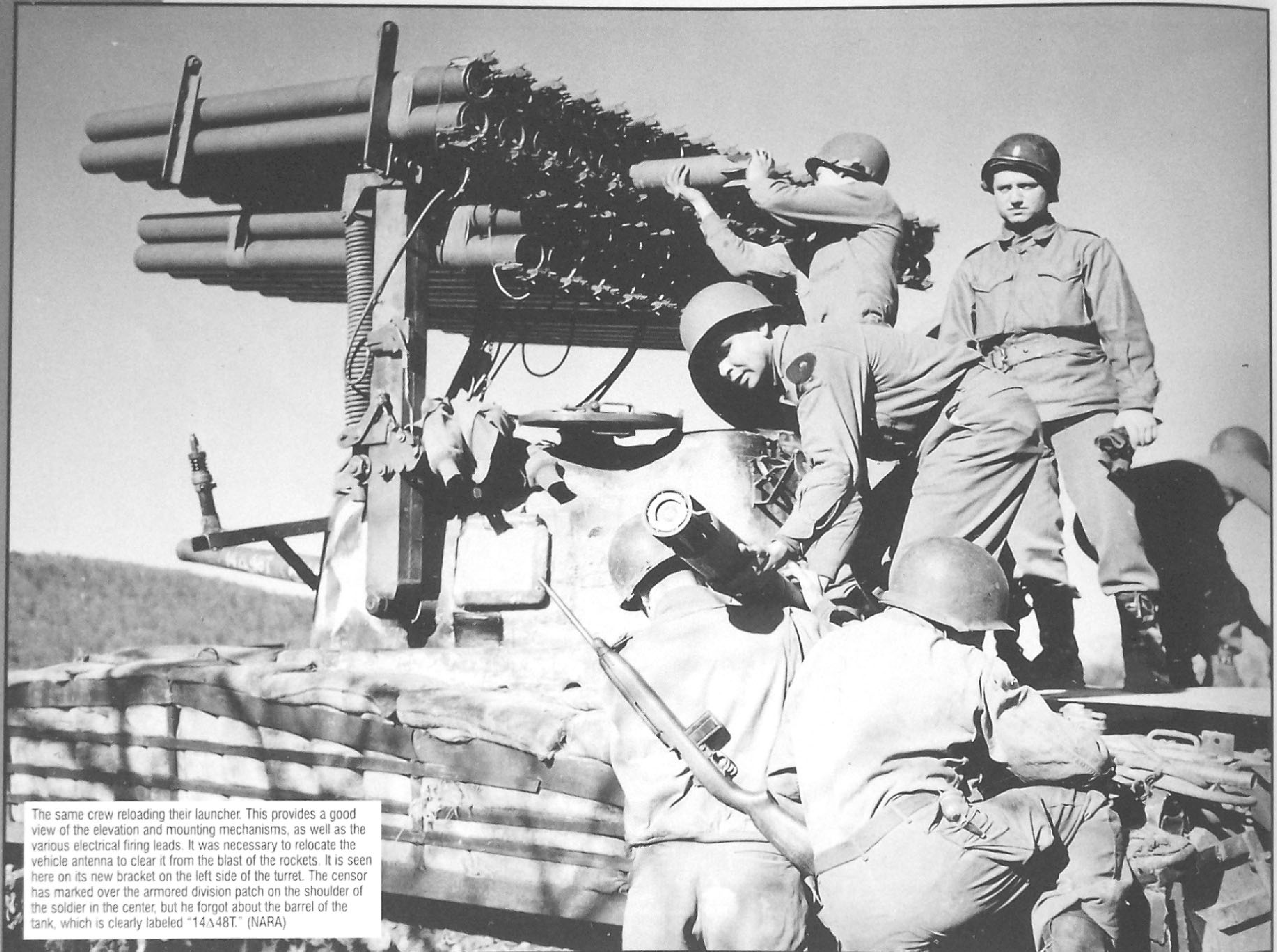
T34 launcher was designed by the US Ordnance Department in late 1943. The launchers were le in the US and shipped to England before D-Day for installation on Sherman tanks. The original tubes, based on the M10, were made out of plastic and became useless after a few firings. ghing 1,840 pounds, the T34 carried 60 4.5-inch rockets in 90-inch long tubes. Mated to the Sherman chassis, they were nicknamed the "Calliope." This is believed to be a vehicle of the 14th Armored Division in Germany in late January 1945. The elevation arm on the earlier T34 launcher has been removed from the gun barrel and attached to the rotor shield. This field expedient allowed the main gun to be used but still restricted the elevation of the launcher. (NARA)



The T34 was supposed to be a jettisonable apparatus, which after firing could be discarded. The problem was the launcher elevation arm was attached to the main gun barrel. This meant that the gun could not be used until the launcher had been jettisoned, making it very unpopular with the crews. A subsequent version, the T34E1 was modified to allow the main gun to be fired without jettisoning the launcher array. Based on the M15 launcher, the T34E1 also featured an improved disconnect system and magnesium, instead of plastic, or steel tubes. This group of M4s from the 48th Tank Battalion of the 14th Armored Division rests near the town of Dettwiller in mid February 1945. The tank in the foreground mounts an early T34 with the elevation arm installed on the barrel of the main gun. Both Shermans in the foreground have some type of cowling installed on their engine decks to protect them against the blast of the rockets. (NARA)



A good close-up of the front of the launcher array, again from the 48th Tank Battalion. This is the T34 launcher with elevation arm attached to the gun barrel. However, it appears to have been retrofitted with either steel or magnesium firing tubes. A portion of the electrical firing system is visible on the elevation arm in the center of the photo. The T34 and T34E1 could be fired in three stages (each of the lower 12-tube arrays and the larger 36-tube), or all at once. (NARA)



The same crew reloading their launcher. This provides a good view of the elevation and mounting mechanisms, as well as the various electrical firing leads. It was necessary to relocate the vehicle antenna to clear it from the blast of the rockets. It is seen here on its new bracket on the left side of the turret. The censor has marked over the armored division patch on the shoulder of the soldier in the center, but he forgot about the barrel of the tank, which is clearly labeled "14∆48T." (NARA)



Preparation for firing continues. The Sherman has been reinforced with sandbags for extra protection and this specific modification, along with the larger rear stowage box, were common sights on Shermans of the 14th Armored Division in early 1945. One of the fiber storage tubes for the 4.5-inch rocket lies on the left side of the deck. Interestingly, there was also an infantry version of the launcher, the M12. This was composed of a special packing crate containing a single M8 or M8A1 rocket and an igniter. The whole array was mounted on a tripod for firing. (NARA)



One of the 48th Tank Battalion's Calliopes firing. Although these rocket launchers were originally envisioned to provide a high density of fire ahead of the assault troops, counter battery fire was considered a major issue. It was difficult, if not impossible to disguise the fire and smoke caused by a launcher. It was hoped that the mobility and armor of the Sherman would help to offset this disadvantage. The original T34 Calliope first saw action during Operation Cobra, where three of them fired the opening barrage on the German positions near Saint-Lo. (NARA)

German SdKfz. 250 Halftrack

The SdKfz. 250 series of halftracks was the logical automotive progression of the SdKfz. 10 1-ton halftrack. It was designed to meet the need for a compact armored vehicle for use in the recon role. The design requirement also suggested that the vehicle be large enough to carry at least four men in addition to its crew. The existing designs of the time, four, six and eight wheeled vehicles, all exhibited poor cross-country performance. The SdKfz. 10 1-ton tractor, served as a basis for the design, but was modified to accommodate an armored body designed by the firm of Büssing-Nag. The new halftrack was officially designated Leichte Schützenpanzerwagen SdKfz. 250, but is commonly referred to as le SPW. Production began in June of 1941 and ran until October of 1943. Over 4,000 vehicles were produced in twelve official variants. These variants were designated as SdKfz. 250/1, 2, 3 and so on. After October 1943, the body of the SdKfz. 250 was radically redesigned and these vehicles became known as "le SPW Neu," while the pre-production vehicles became known as "le SPW Alte." The SdKfz. 250's were normally assigned to the "Auklärungs" (recon) units of both Panzer and Panzergrenadier divisions. In this feature the SdKfz. 250/1 "Alte" is primarily examined.



Above: two SdKfz. 250's wait outside a Russian village for armored elements to arrive. The purpose of the Auklärungs company was to determine points of resistance and direct the proper forces towards them. Both these vehicles are the 250/3 variant. This was known as the leichte Funkpanzerwagen and was used to transport the FuG7, FuG12 or a combination of the FuG7 and FuG8. All used the distinctive two-meter antenna. The vehicle in the center has an interesting unit-made stowage box attached to the rear armored panel. (BA)



This one and the following three photos depict 250's of the 2./Kradschtz.Btl. of Panzergrenadier Division Grossdeutschland. They are seen in the area of Voronezh in June of 1942. The SdKfz. 250 was issued with a complete all weather tarp, but it was commonly removed or pushed back for easier access to the interior. Initial issuance of these vehicles was primarily to elite units, such as GD, and these vehicles are some of the first issued. (BA)



According the book *God, Honor and Fatherland*, this is the vehicle of the squadron commander, one Oberleutnant Hans Klemme. This is, again, a 250/3. This particular configuration, with the frame aerial, mounted both the FuG7 and the FuG 8. The FuG7 could be used for air-to-ground communication and the FuG8 was part of the divisional command net. Note the numeral one on the rear superstructure and the markings for 2./Kradschtz.Btl, and the familiar GD stalhelm emblem. (BA)



A front view of Oberleutnant Klemme's vehicle. A very neat mounting arrangement for water cans has been added to the right side fender. These types of unit modifications were common on vehicles of the GD, which had a highly efficient and organized divisional workshop. Note the overlapping "GD" symbol and the word "Chef" on the right side superstructure. This was often seen on the unit commander's vehicle. (BA)



A Sd.Kfz. 250/10 le.SPW (3.7cm PaK) Zugfuhrerwagen (platoon commander's vehicle). The Sd.Kfz. 250/10 was issued to each platoon commander of le.SPW platoons to provide heavy fire support. The crew consisted of four, a driver, gun/vehicle commander, gunner and a loader for the 3.7cm PaK 35/36. The weapon was not only useful for attacking known targets, but also for supporting the normal method of advancing, which was to have two or three groups of vehicles "leapfrog" through each other's positions, supporting each stage of the move. Carrying four men and 216 rounds of 3.7cm ammunition on board, space inside for stowage was at a premium and the crew members have stowed much of their gear on the outside of the vehicle. (BA)

Forward recon elements of the 6th Army probe the defenses of Stalingrad in the late summer of 1942. This is a 250/3 (note the dual antenna) and it still retains its all-weather tarp. A name has been stenciled just behind the side mounted water can. (BA)





Another Sd.Kfz. 250 of the Panzergrenadier Division Grossdeutschland. This vehicle is believed to be part of the I/Pz.Rgt. and is seen here at the approaches to Kharkov in March of 1943. An expertly constructed stowage box has been added to the right side fender. A similar box would become part of the production series later that year. Note the 'Flammpanzer III" flame-thrower tank in the background. (BA)



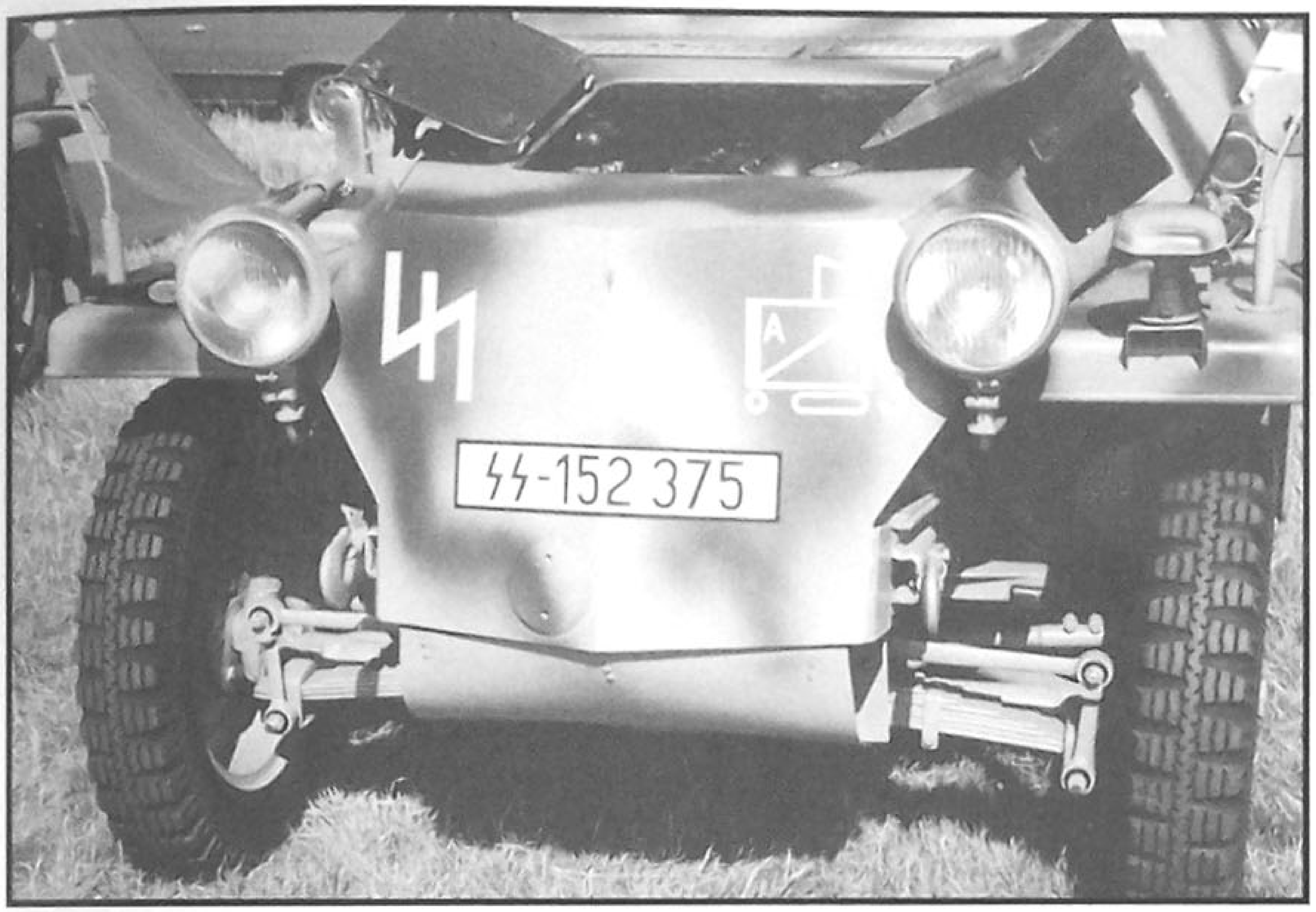
A Sd.Kfz. 250/1 of the SS-Panzergrenadier Division Leibstandarte advances towards the city of Kharkov in early March of 1943. This vehicle was part of SS-Pz.Gren.Rgt. 1, which after crossing the Msha River, attacked the city from the north. This picture was taken in the village of Dergatschi, a sizable obstacle on the road into the city. (BA)



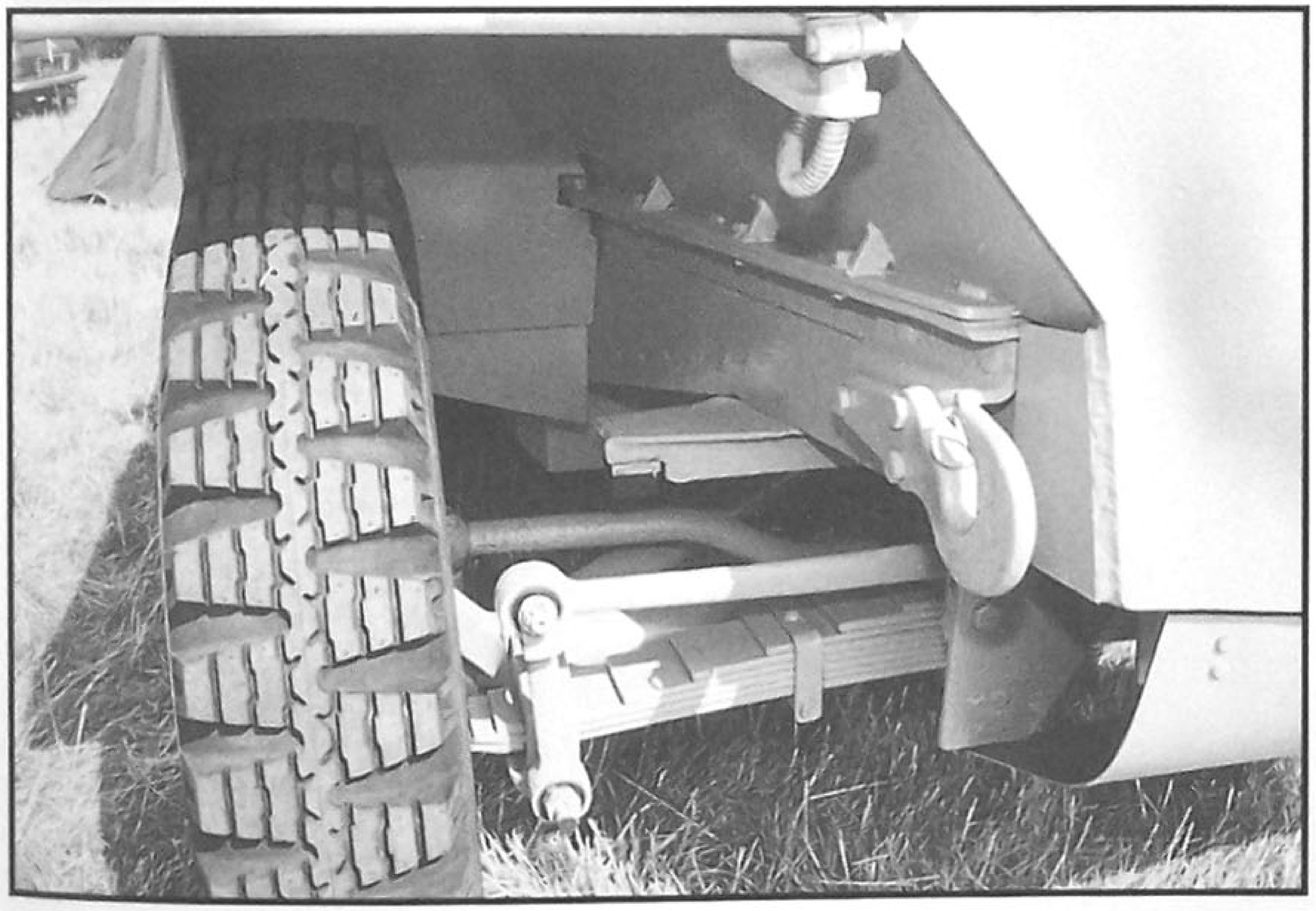
Halftracks of the III./SS-Panzergrenadier Regiment 2 race towards the center of Kharkov city, probably on March 11, 1943. This unit was led by the well-known LAH commander Joachen Peiper. With the support of the Panzer regiment's 2nd battalion, they saw continuous and heavy fighting throughout the first two weeks of March. (BA)

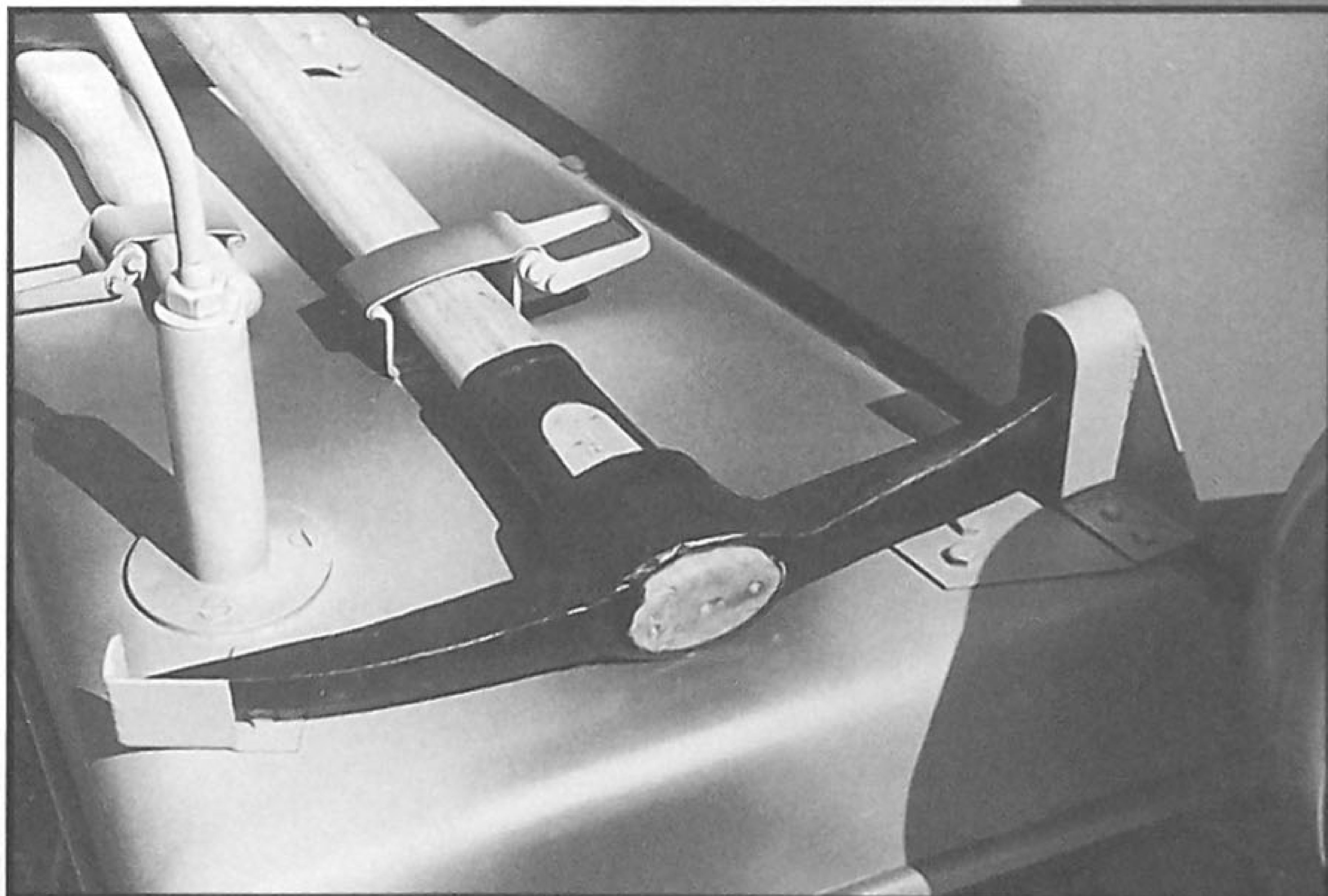


Due to the dedication and hard work of an elite group of enthusiasts, a small number of Sd.Kfz 250 halftracks have survived the war. An even smaller number of vehicles have survived to match the condition of this superbly restored example seen here and in the following pages on display at the Invicta War & Peace show in 2000.

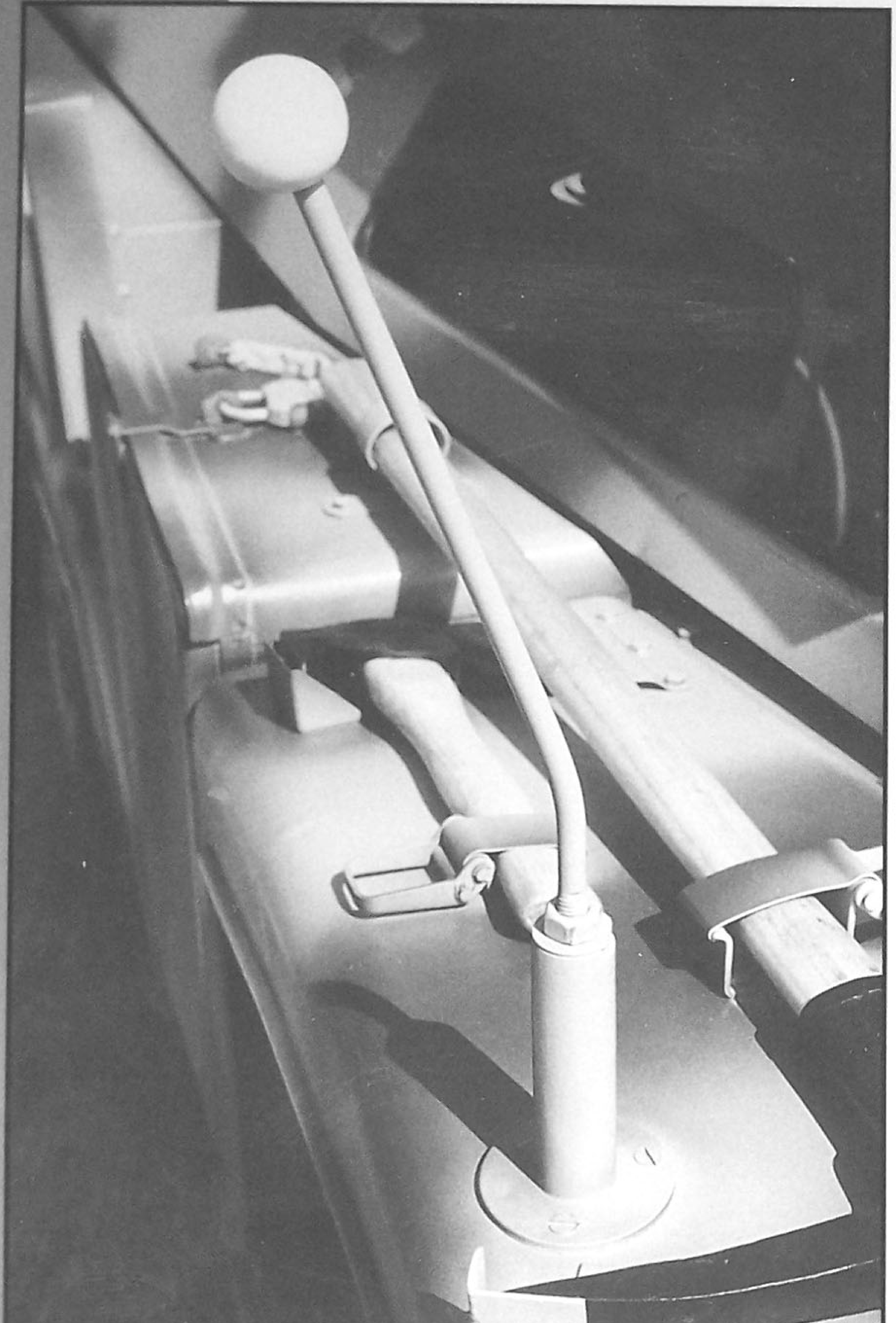


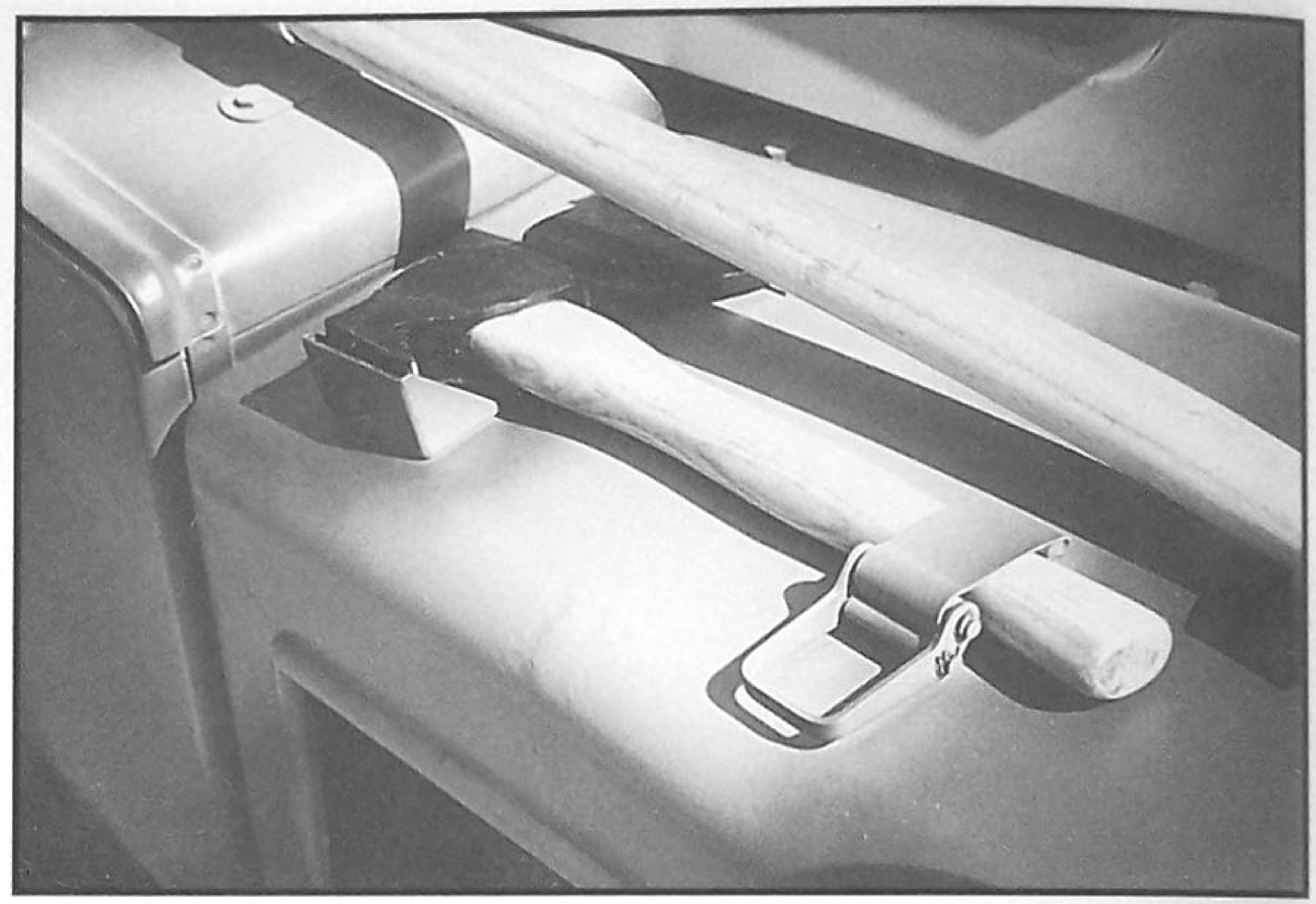


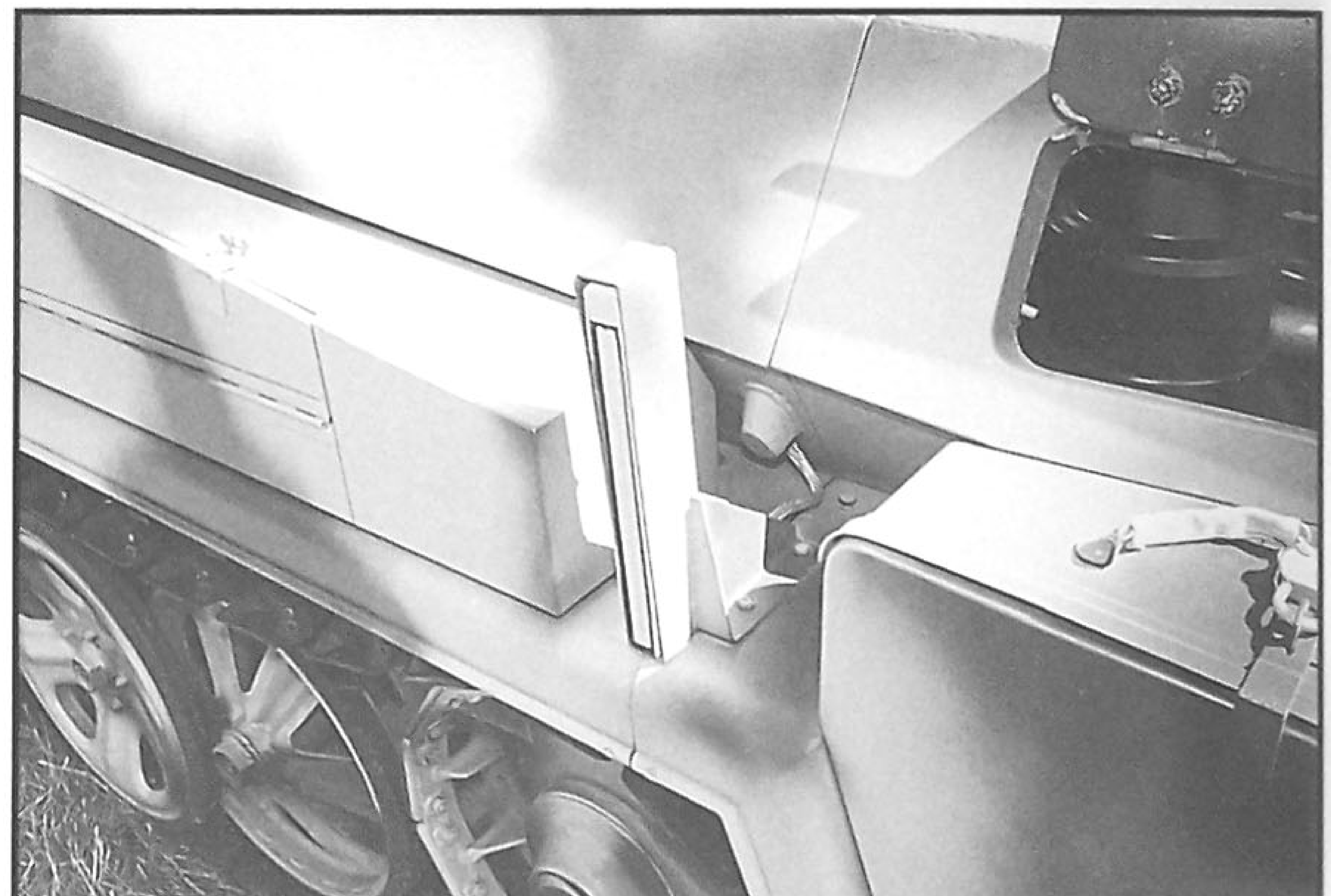




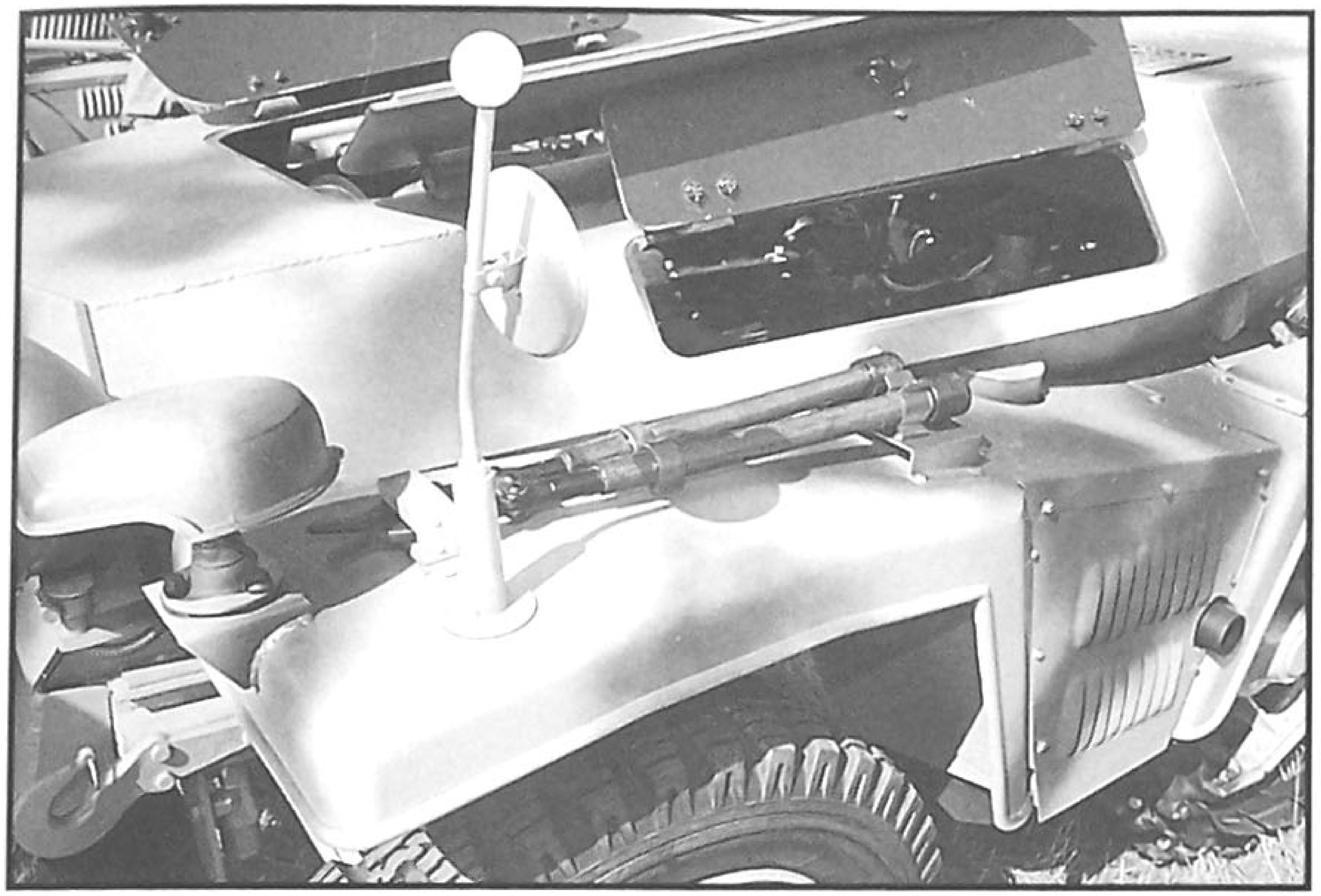
Top left: This restored Sd.Kfz 250 has been appropriately marked as a vehicle of an armored recon unit. In this case, one from the 2nd SS Panzer Division "Das Reich." **Top right and above left:** Close-up views of the front suspension showing the leaf construction of the front axle. The front tow hooks and their mounting positions are also visible. Note the steel brush guard mounted under the front end of the vehicle. This was not an armored panel, but was only present to guard the suspension. **Above right:** The installation of the pick on the right front fender.

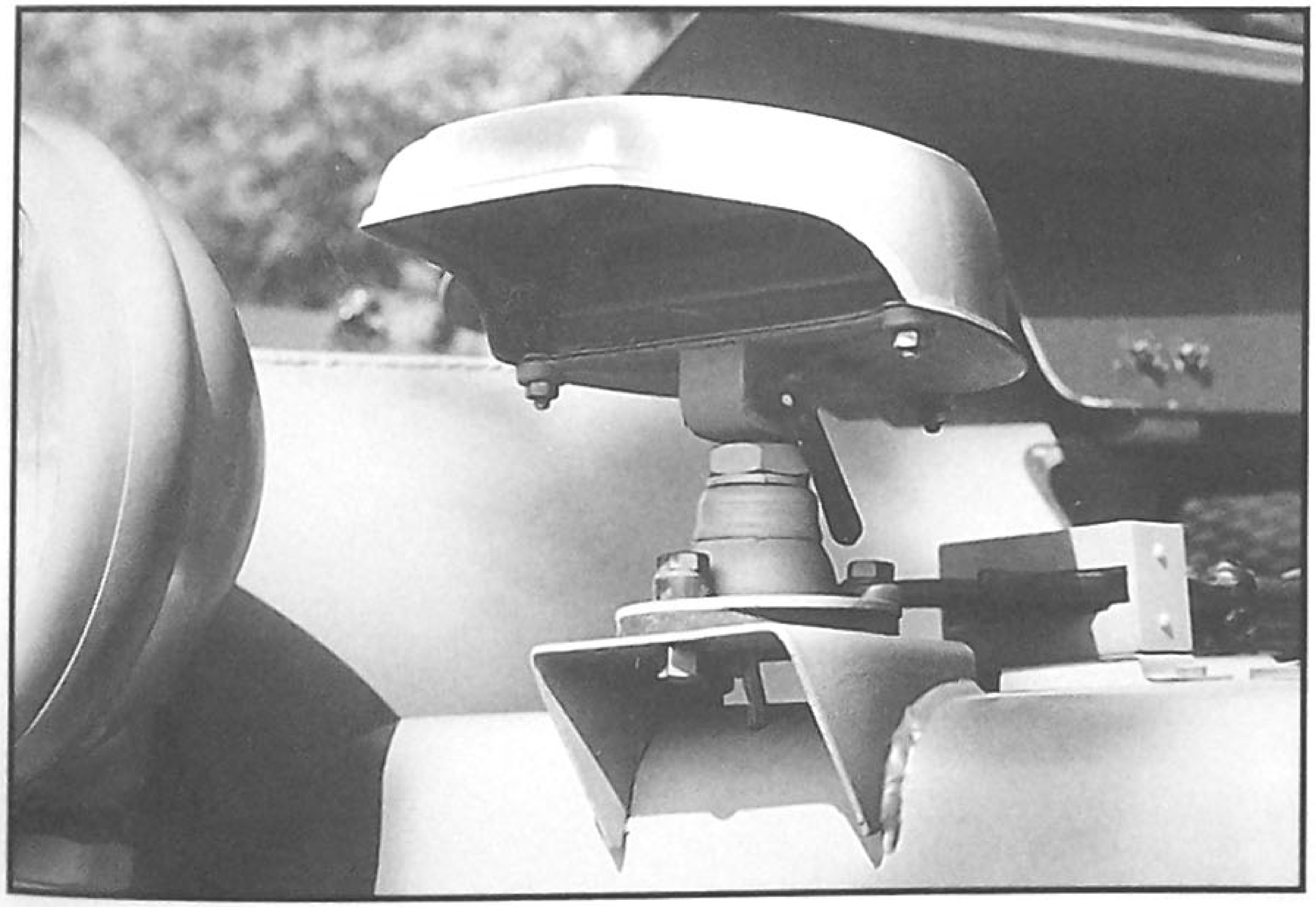


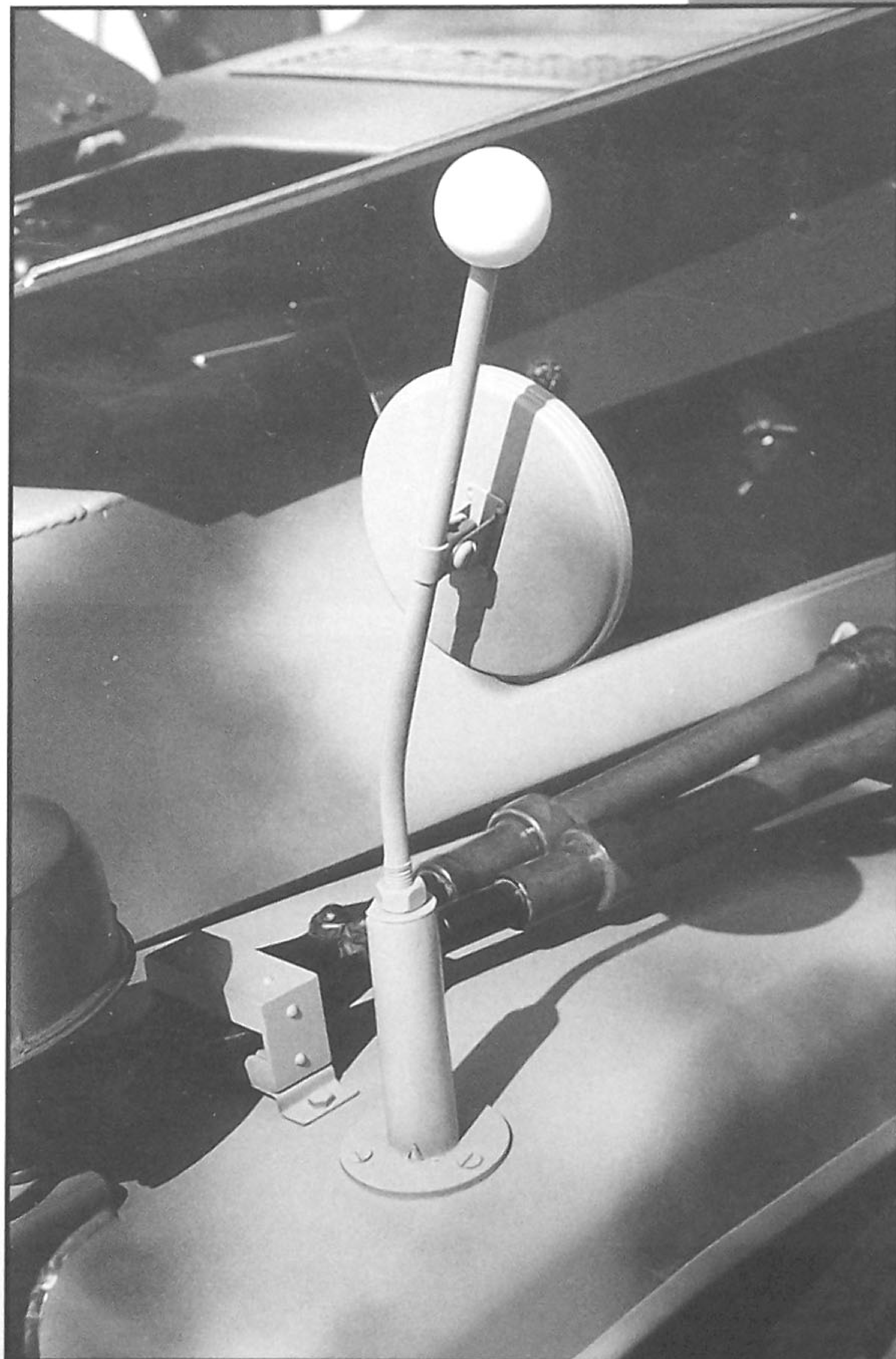




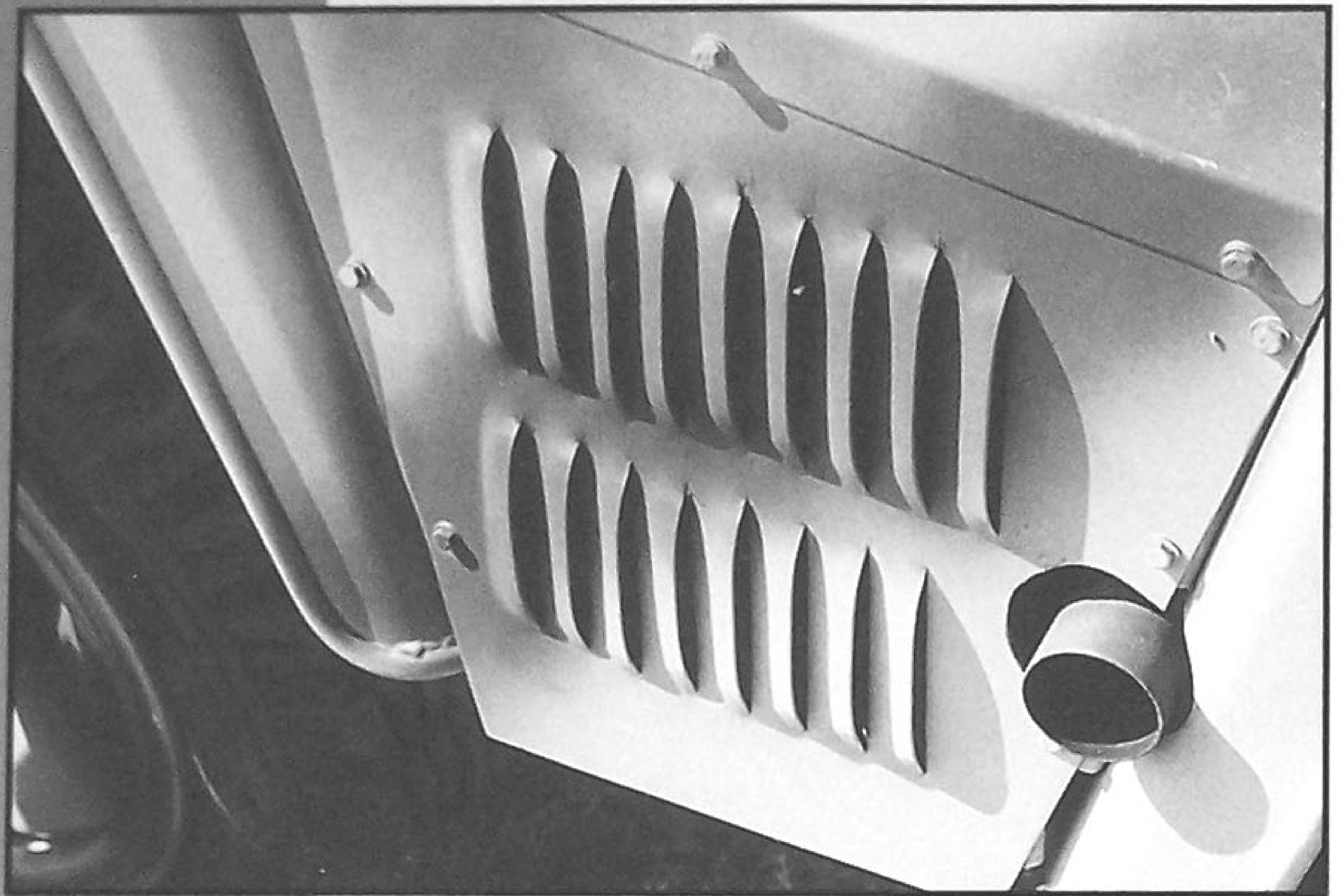
Left: An overall view of the distance marker on the front right fender. The adjustment nut and base plate can be seen clearly here. **Top right:** The installation of the ax on the front right fender. **Above right:** The turn signal and stowage box on the right side of the vehicle.

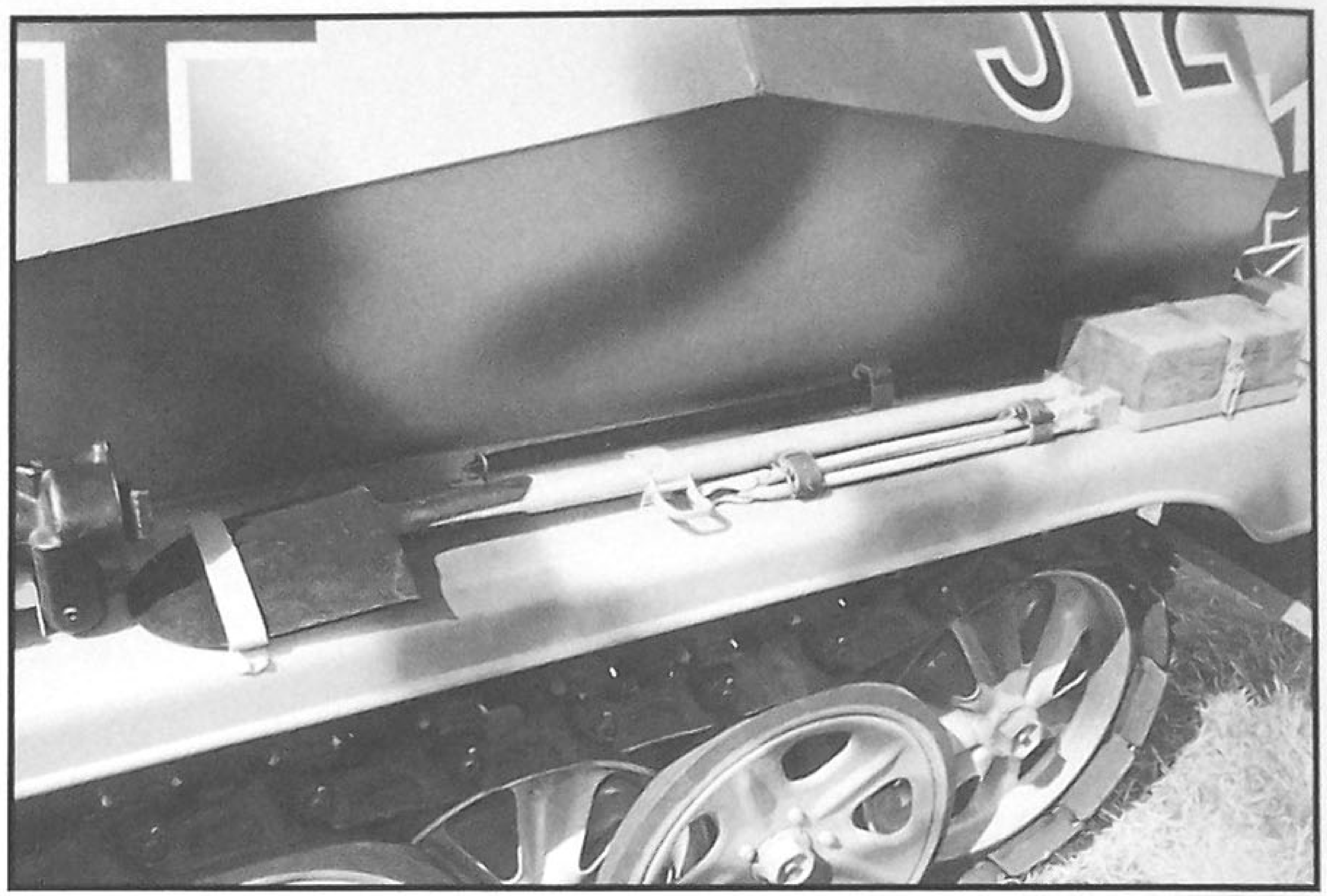


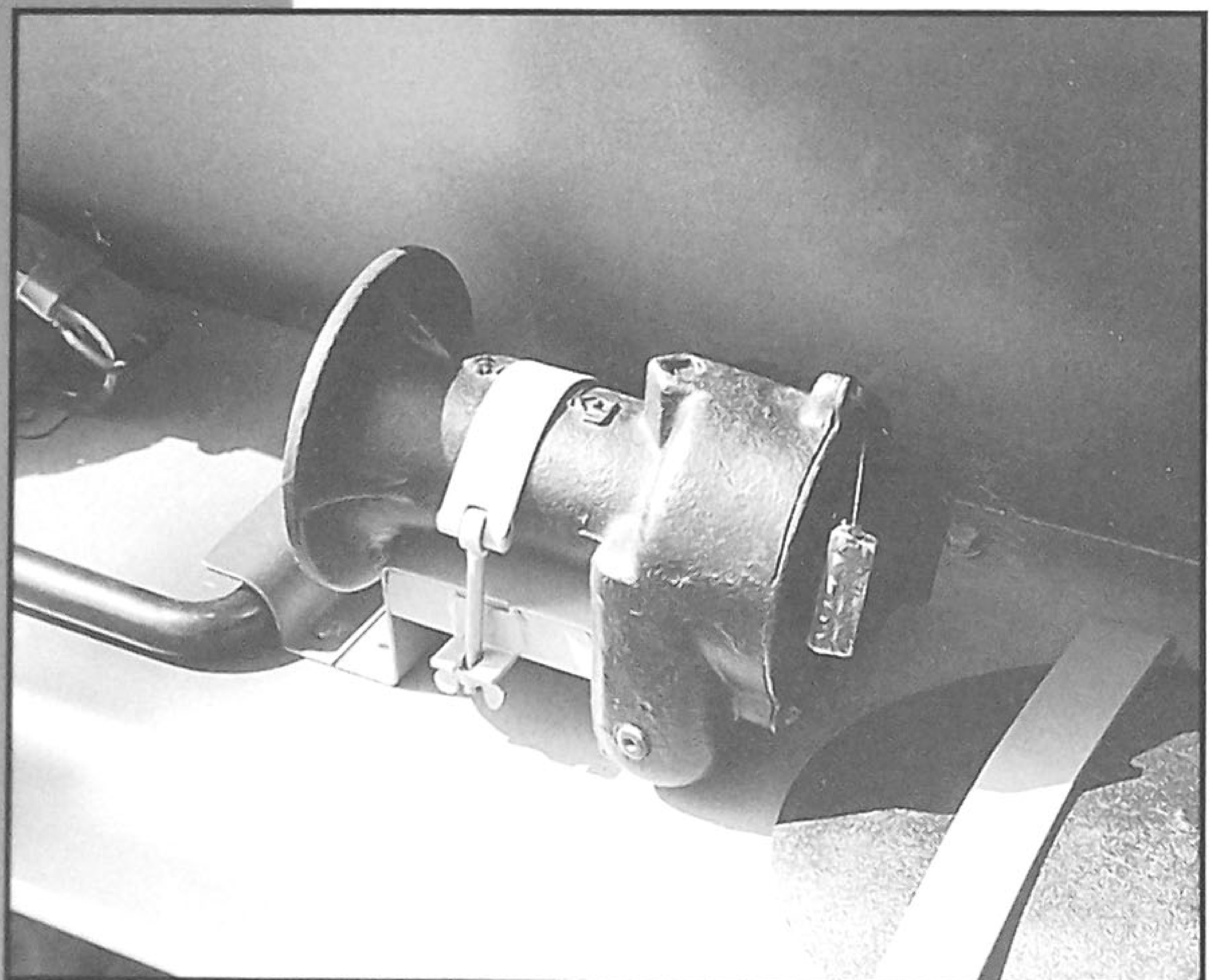


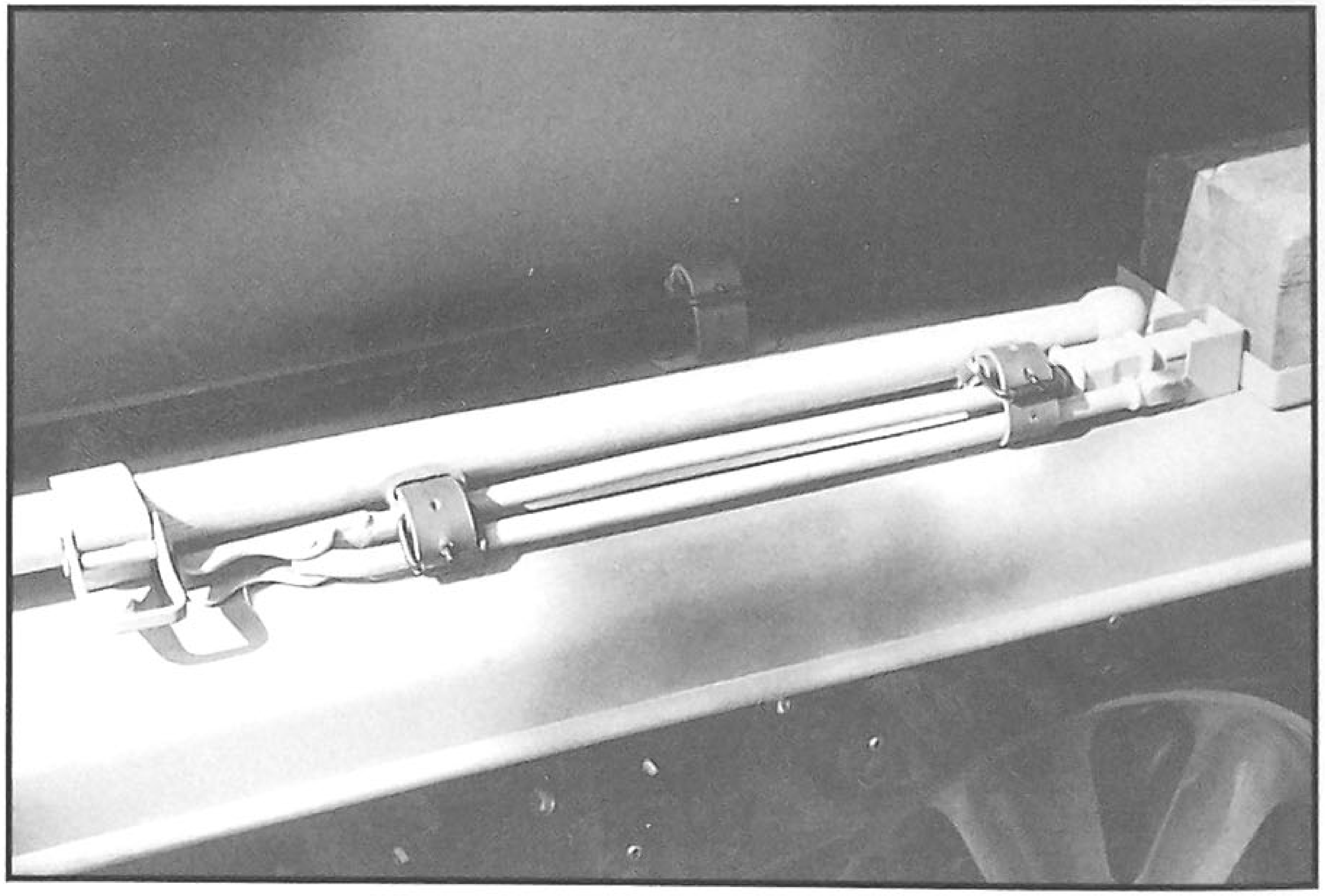


Top left: An overall view of the left fender showing the layout of the Notek light, distance marker and wire cutters. **Above left:** A close-up of the Notek light and its mount. Note the weld bead where the mount meets the fender. **Above right:** Another close-up of the distance marker, this time on the left side fender. This photo provides a good perspective of the mount of the rearview mirror mounted on the marker rod.





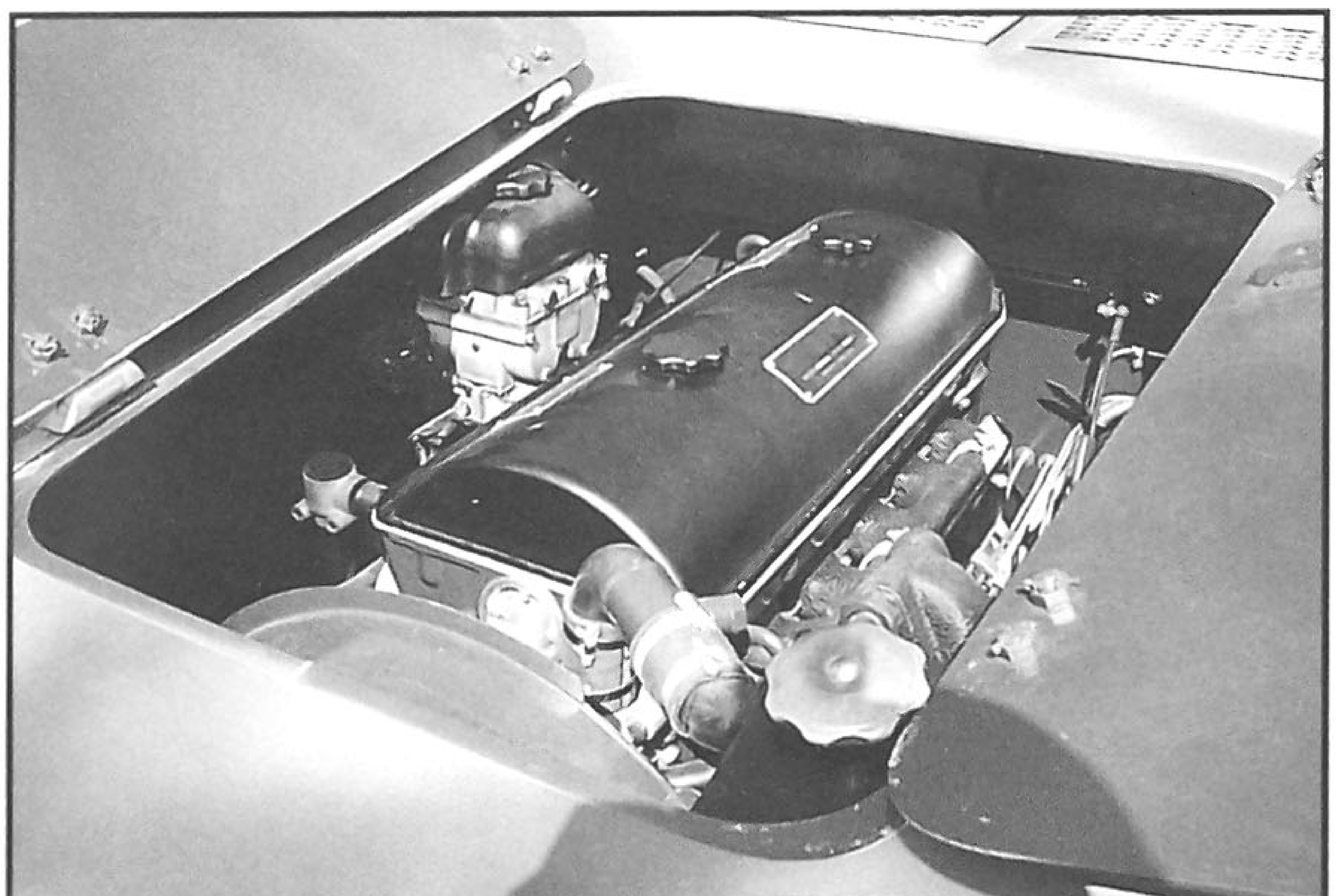




Top left: This vented area houses the muffler. The exhaust pipe is seen protruding at the lower right. **Top right:** The left side tool stowage was composed of the jack, shovel, wrecking bar, jack crank and jack block. **Above left:** The jack and its mount. **Above right:** A closer look at the folding jack crank and its perfectly restored leather straps.

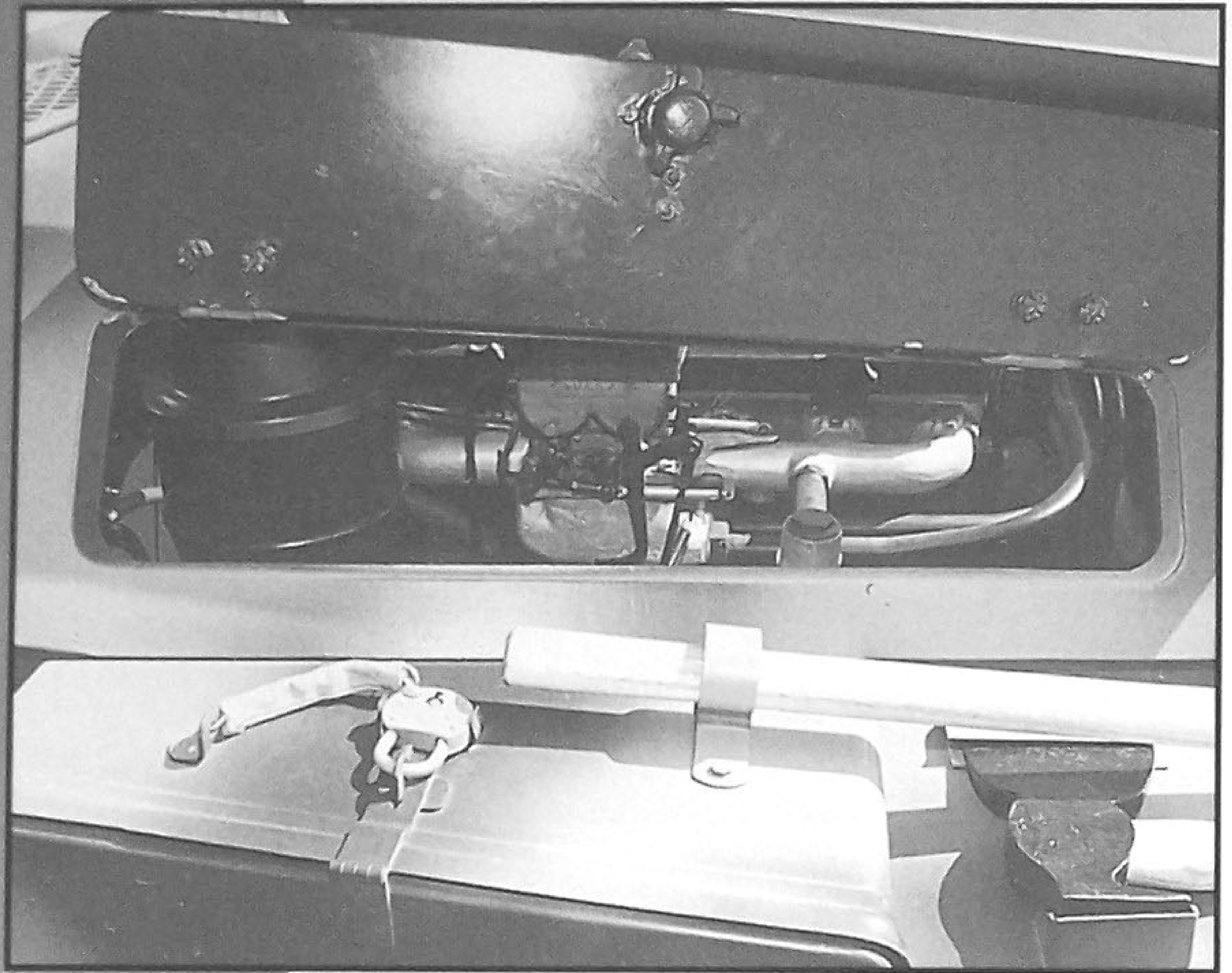


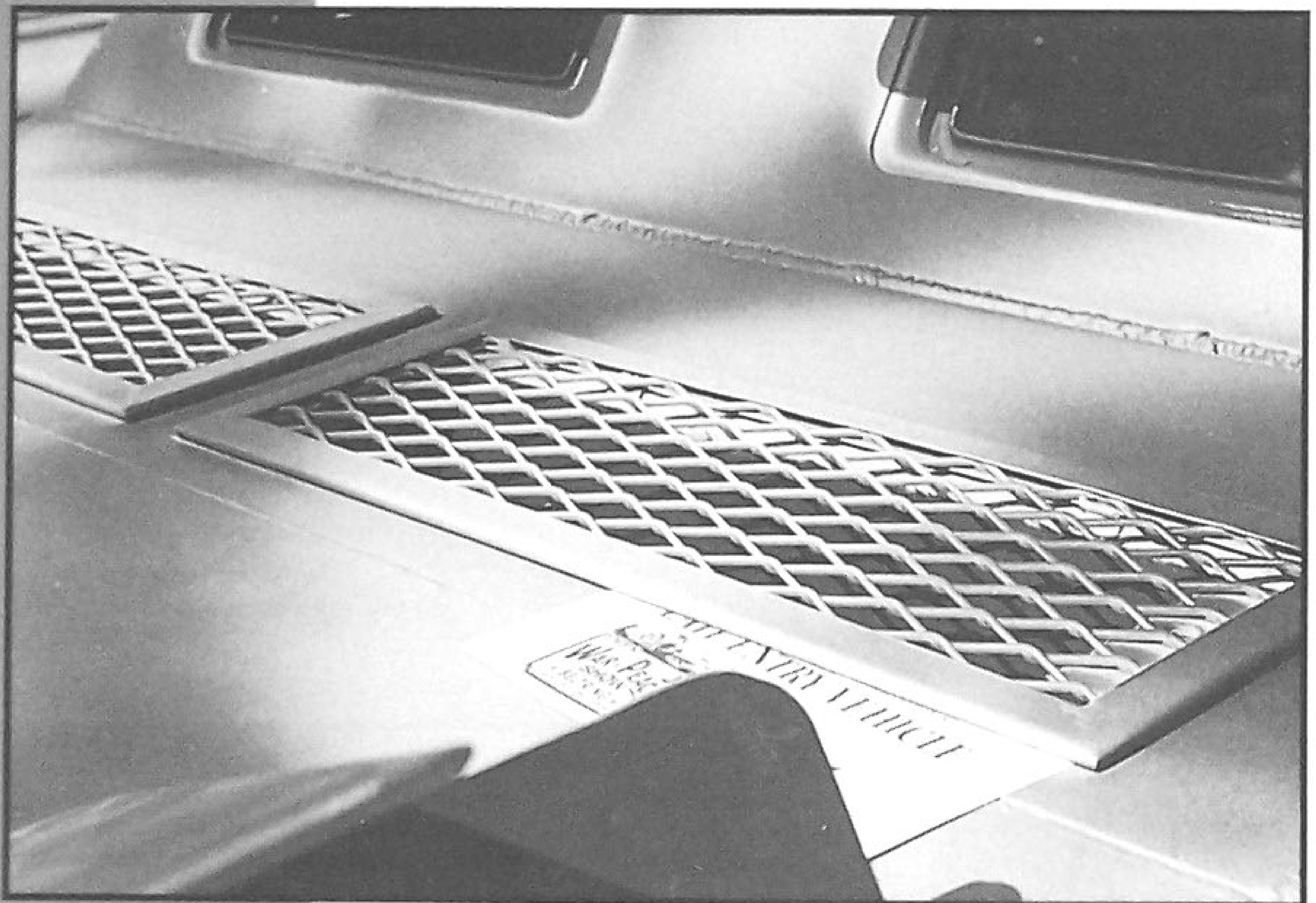


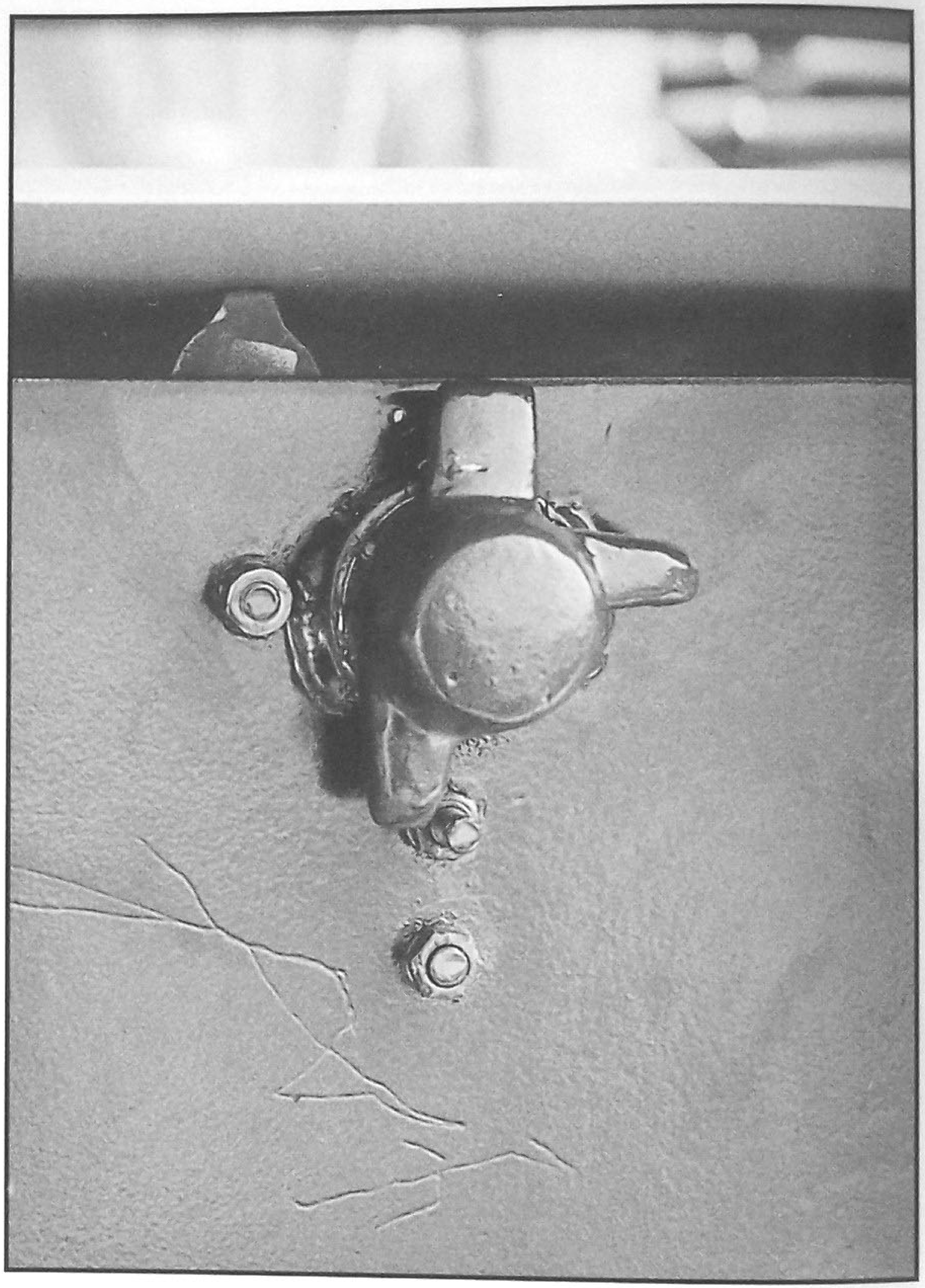




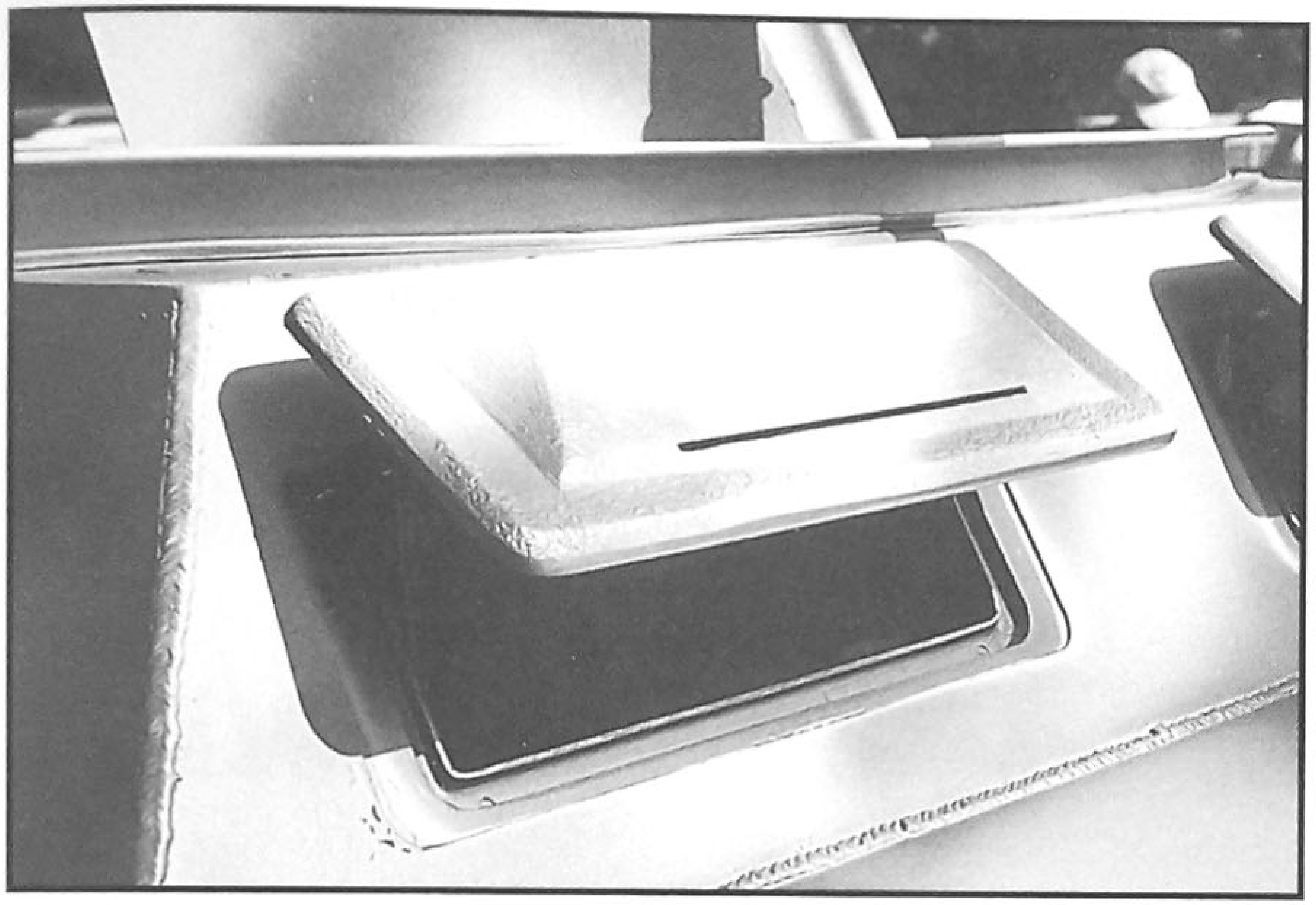
Top left: The left rear fender area showing the rear Notek light. **Top right:** The right rear fender. The right side contained a simple distance marker light. Note the data plate on the back of the right side stowage box. **Above left and right:** Overall views of the Maybach HL42TRKM engine as seen though the open front access hatches. In the left hand shot the Solex two-barreled carburetor can be seen and in the right hand shot the radiator hose and housing is visible, as are the vehicle horn and the top of the exhaust manifold.

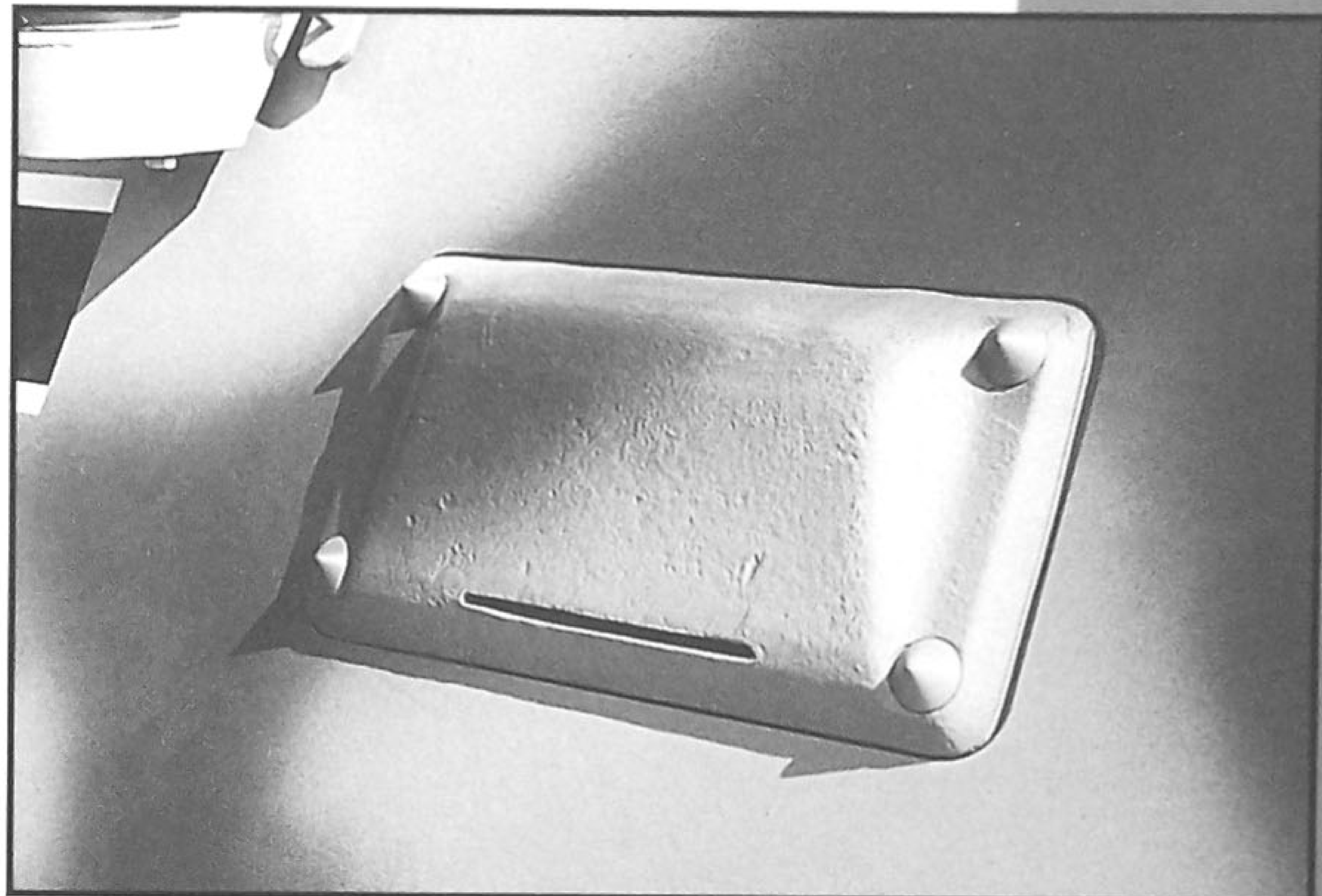


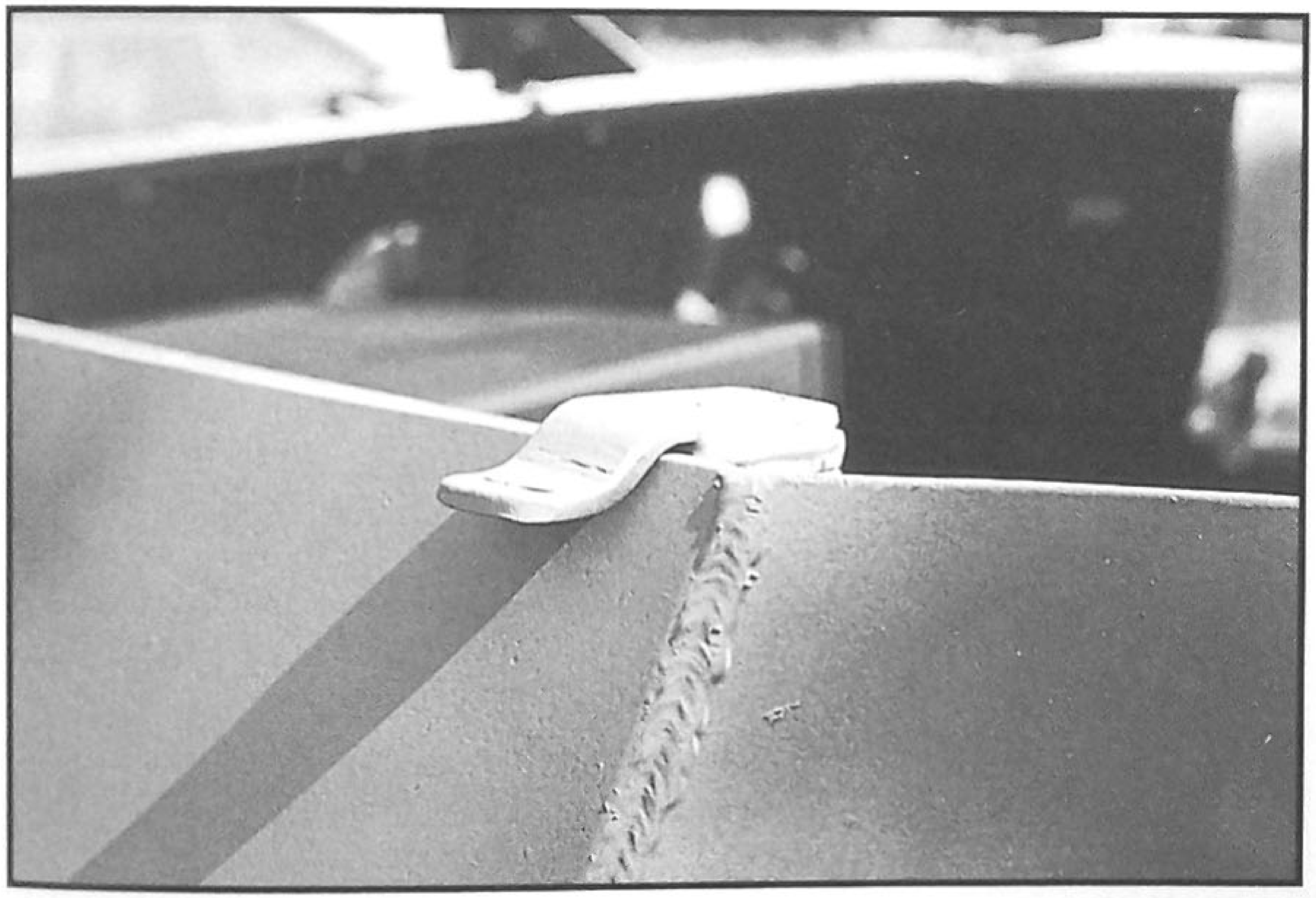


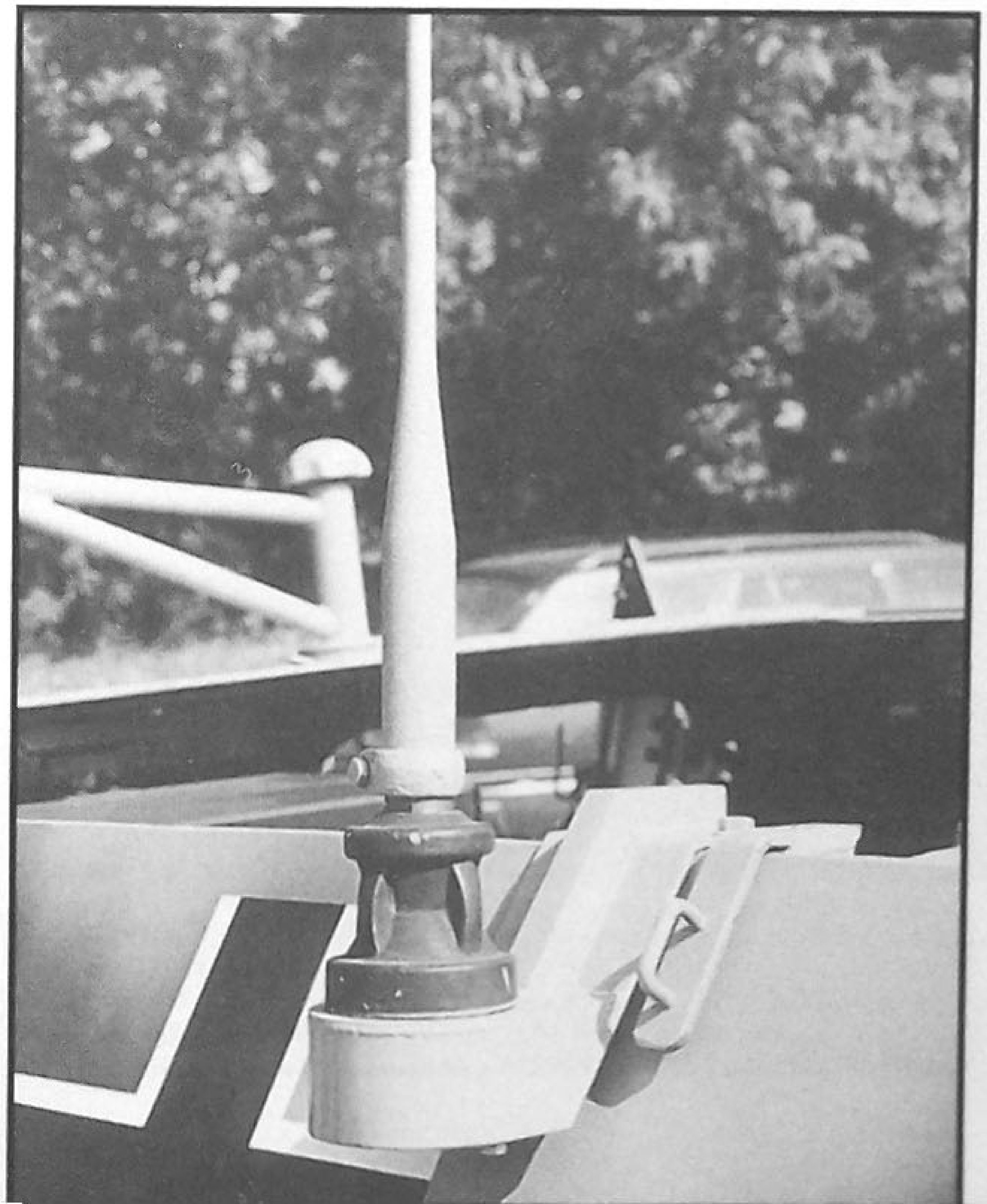


Top left: The engine access hatch on the right side of the engine compartment. This shot provides a closer look at the Solex carburetor and the intake manifold. The top of the right side stowage box and the rear of the pick can also be seen. **Above left:** These two grated openings provide ventilation for the engine and are located just in front of the driver's visor. **Above right:** A close-up of the latching mechanism on the side engine access hatch.

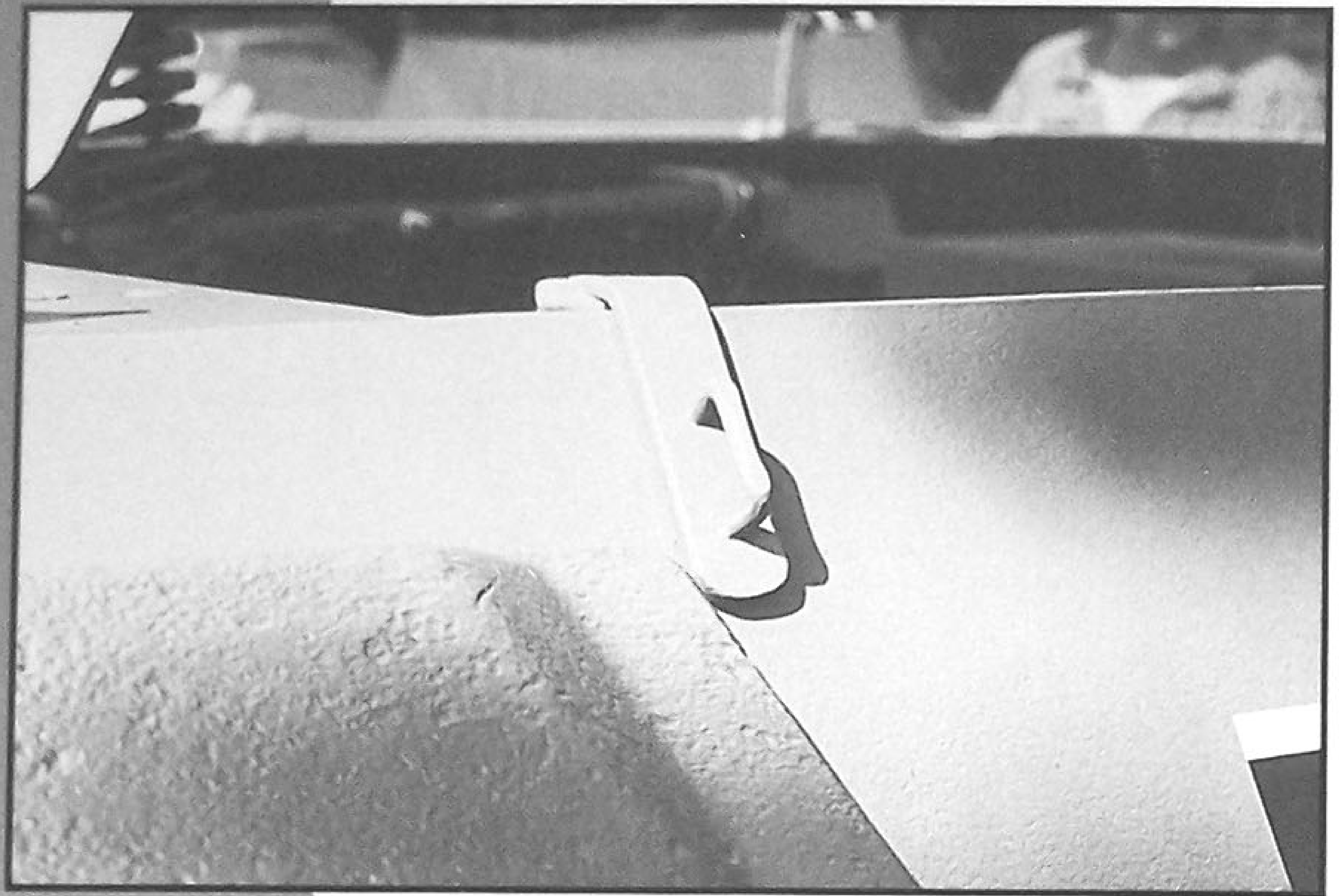




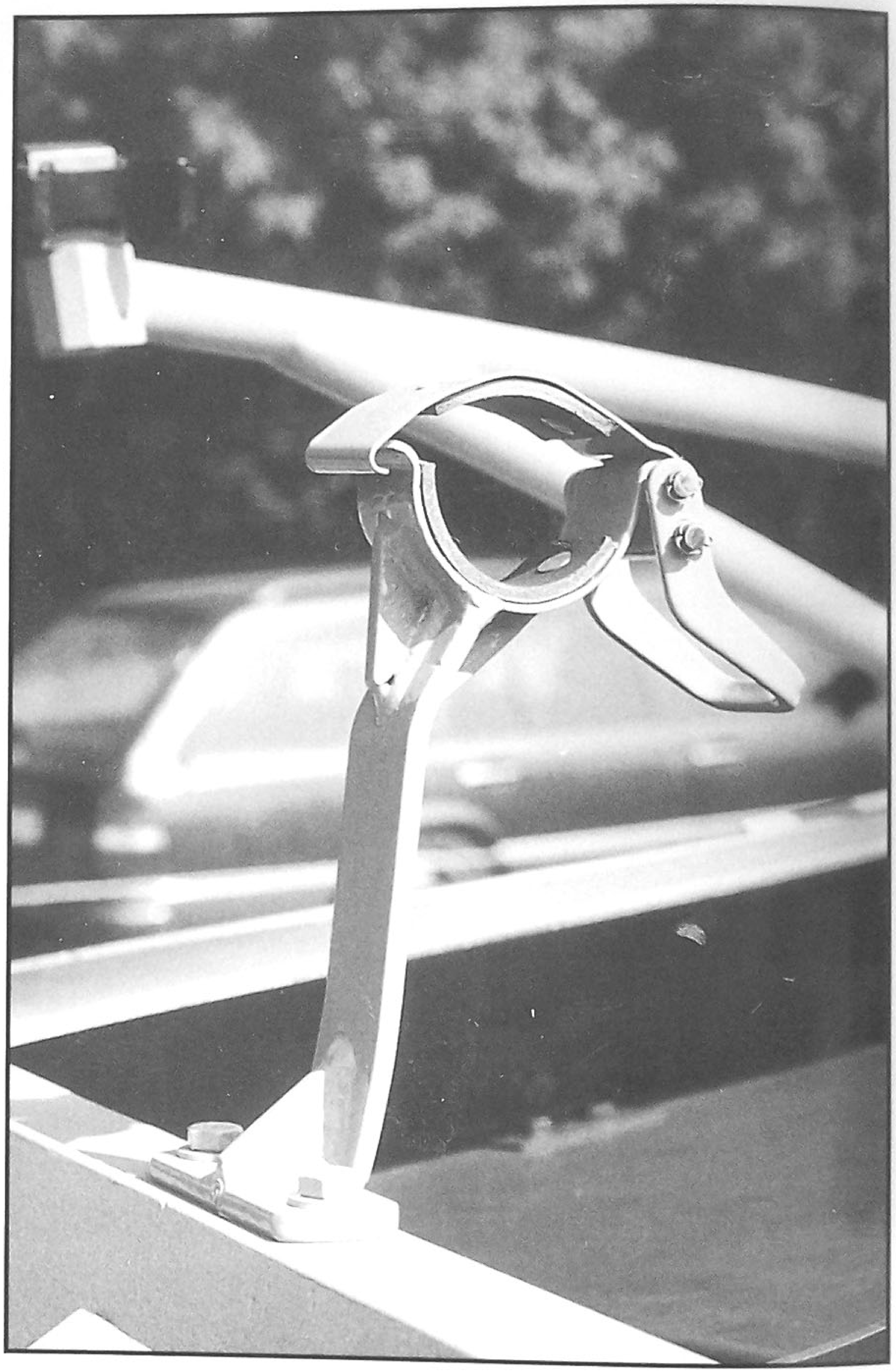




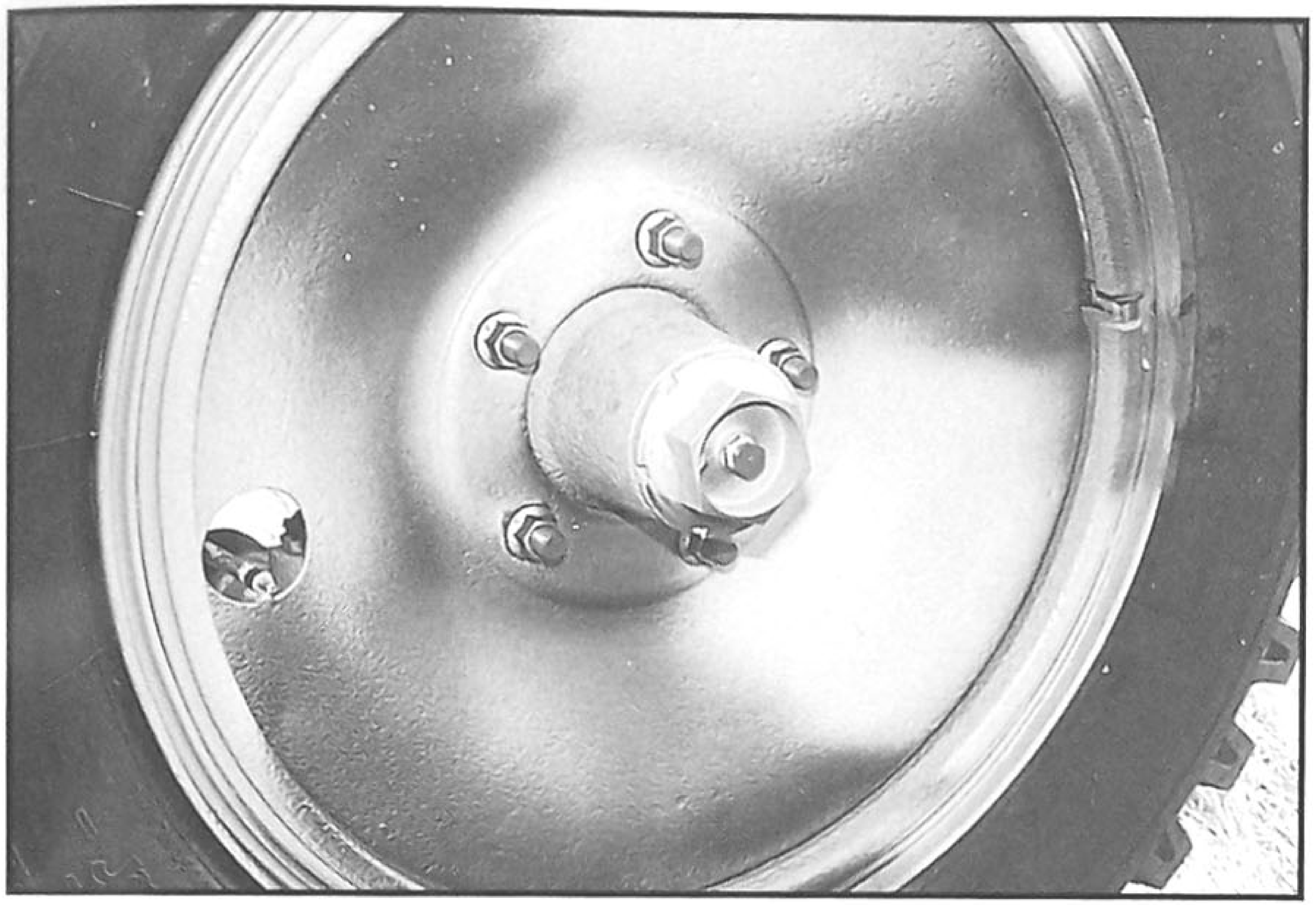
Top left: This is the radio operator's visor. It is a cast, armored piece and the opening is also fitted with armored glass. **Top right:** The right side driver's visor. Note that the two side visors contain conical head bolts. **Above left:** one of several tie-down points located on the periphery of the hull. **Above right:** The antenna mount for the on-board FuG Spr 1 radio set. The base of the antenna is wider than the type installed on Panzers and the rod itself is a two-part assembly.

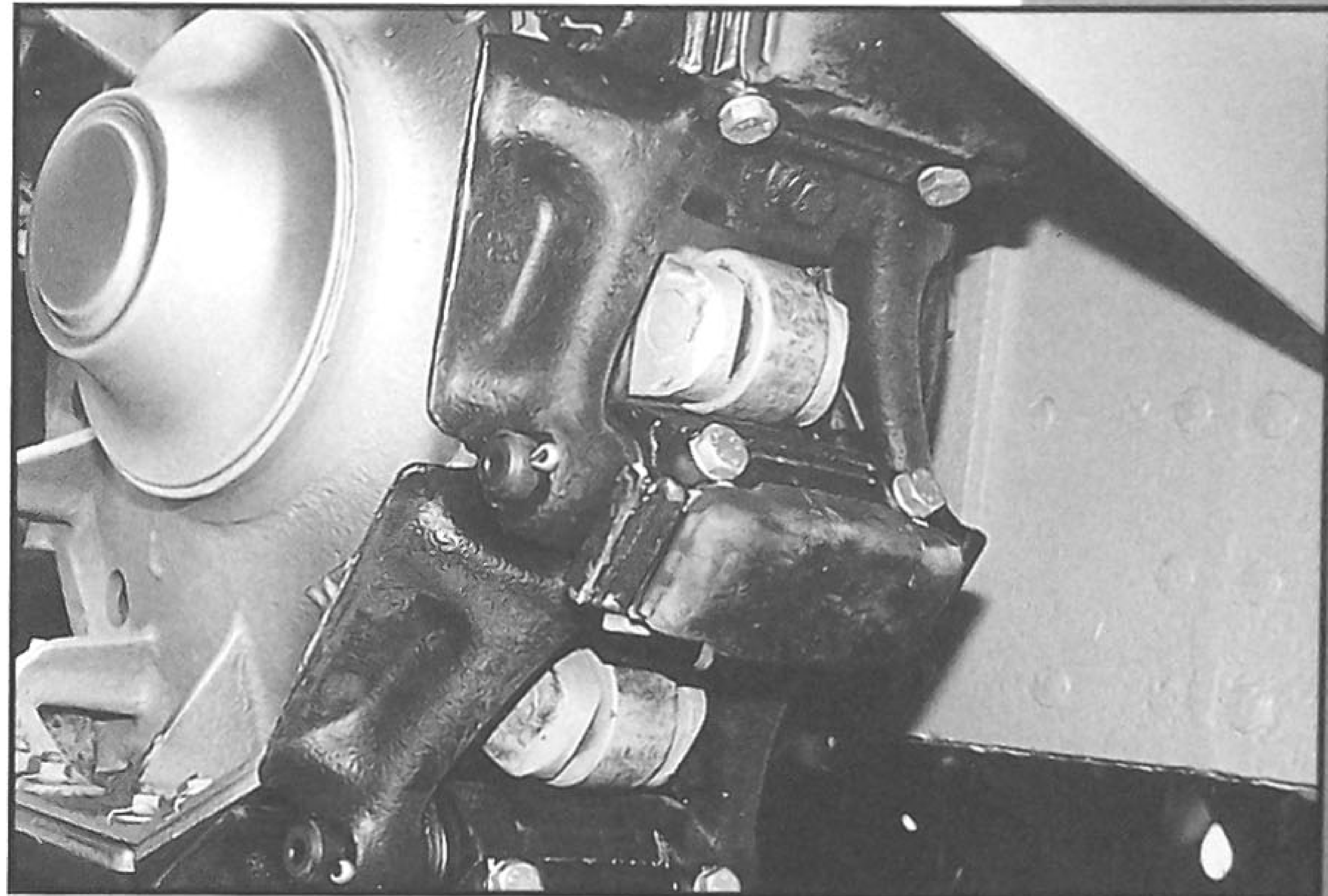


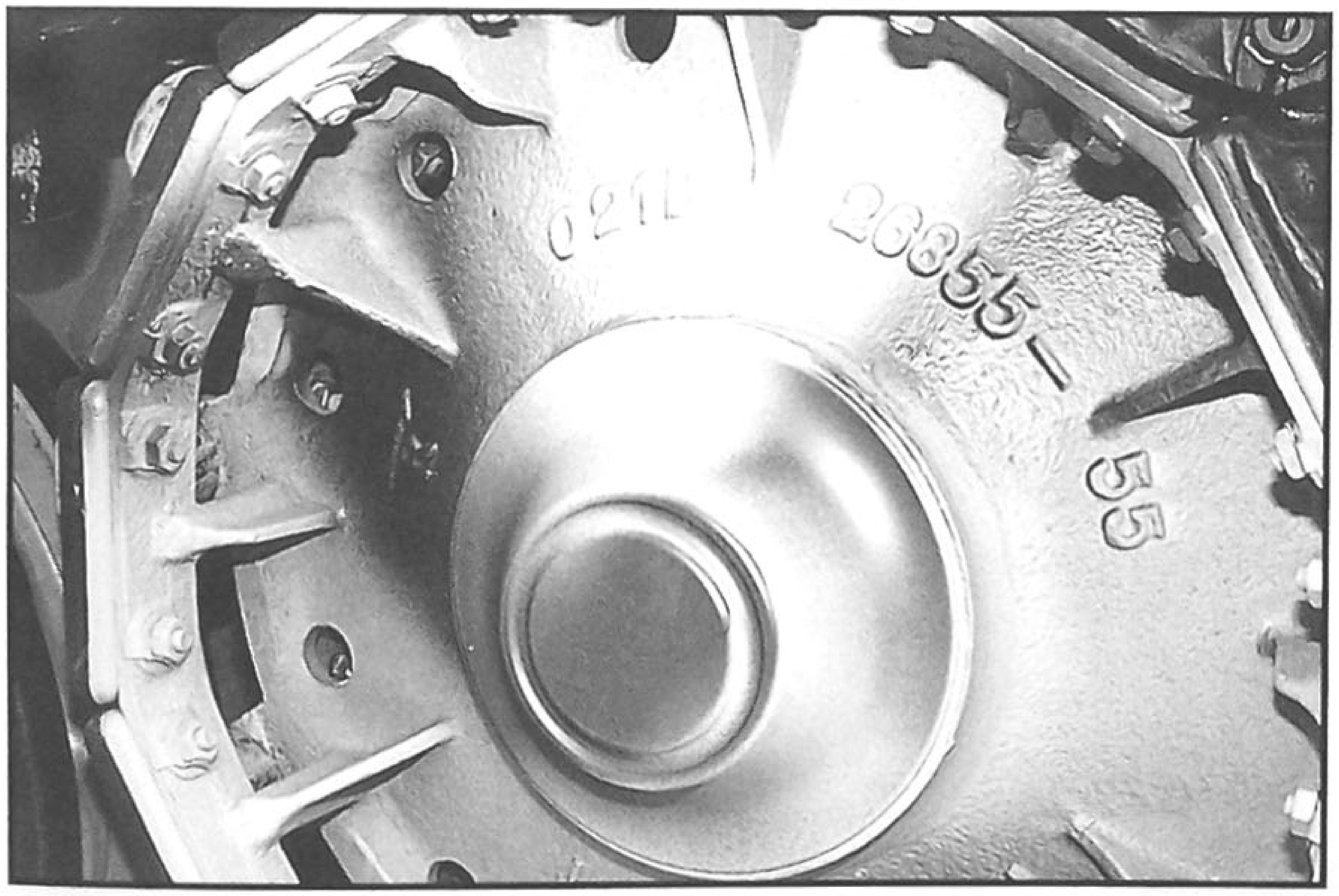


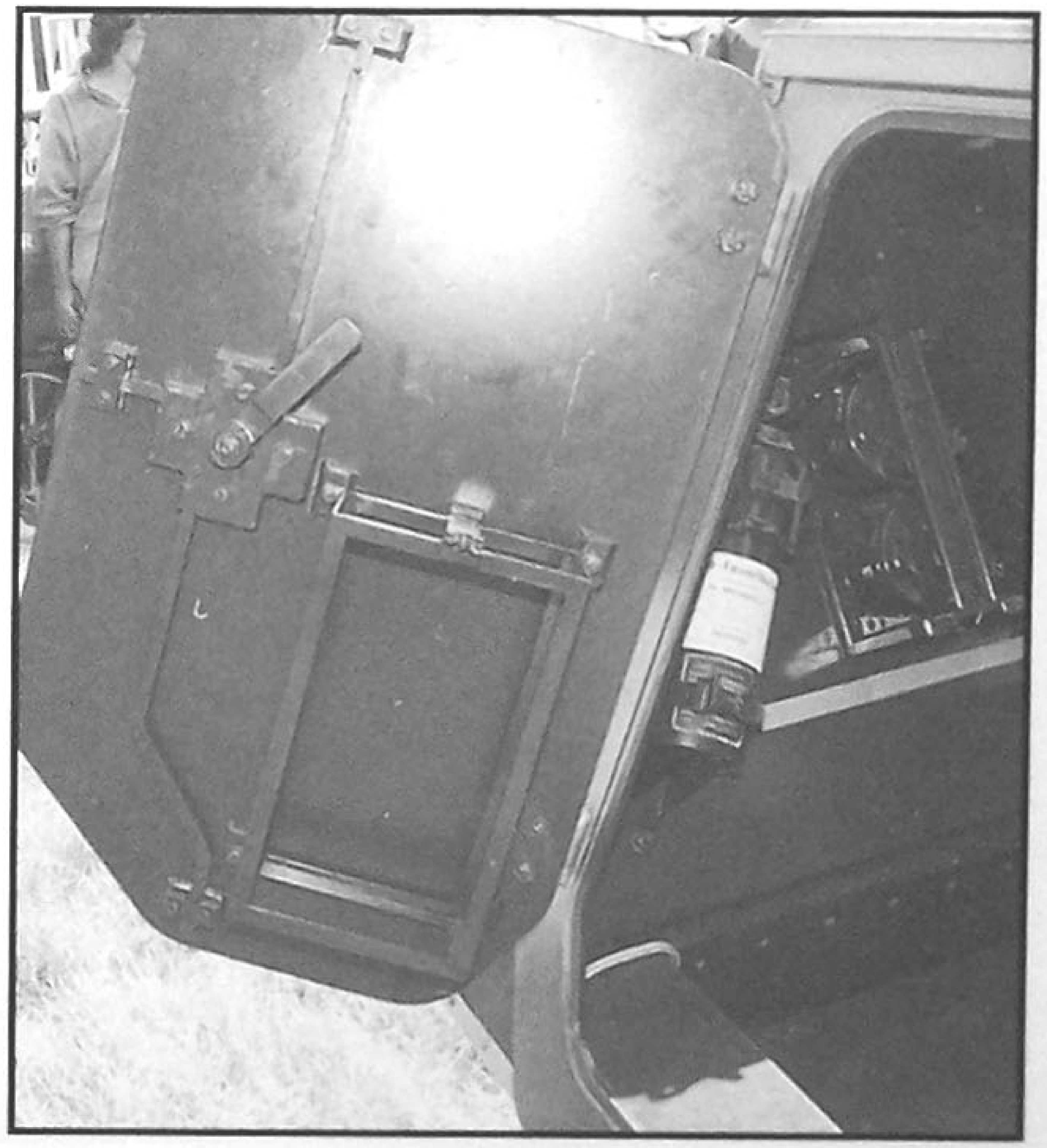


Top left: Another of the tarp tie-downs located around the top of the hull. **Above left:** This is the rear mounted MG rail. The two MG mounts denote a 250/1 (s MG), which carried the second, support half of the "Halbgruppe." **Above right:** This very interesting late detail is the travel lock for the rear mounted MG. It is installed on the top of the right rear superstructure.







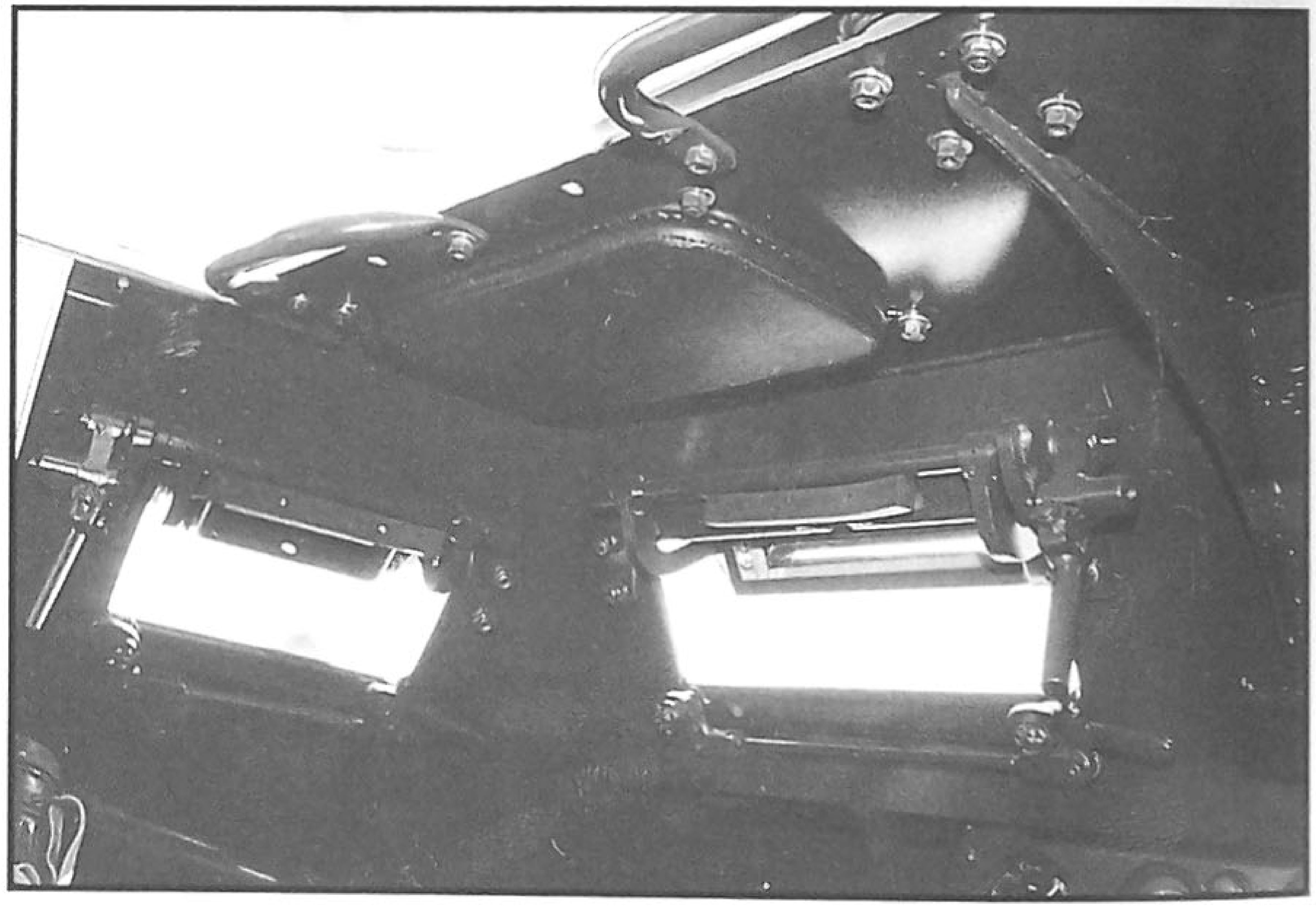


Top left: Both the front wheels were fabricated from light armored steel. The design was the common military split rim style. The air valve stem is seen at the left edge of the photo. **Top right:** A detail shot of the front drive sprocket. The teeth of the sprocket each contained a small wheel that moved as the tracks passed over it. **Above left:** The detail of the sprocket face, including the interior bolts and the casting numbers. **Above right:** The interior of the rear door. The empty bracket was for the installation of the first aid kit.









Top left: The Tetra "Feurloscher" fire extinguisher and its attendant brackets installed just inside the rear door. Two 50-round MG cartridges were stowed next to it. **Top right:** Just inside the rear door and looking back, the interior stowage locker can be seen, as well as the filler cap for the fuel tank. **Above left:** On the right inside of the superstructure, there is stowage for a rifle for each of the four support "Halbgruppe" and a MG 34 or 42. The tripod for the machine gun can be seen just below. **Above right:** The area above the driver's head, showing details of the visors and the head pad.



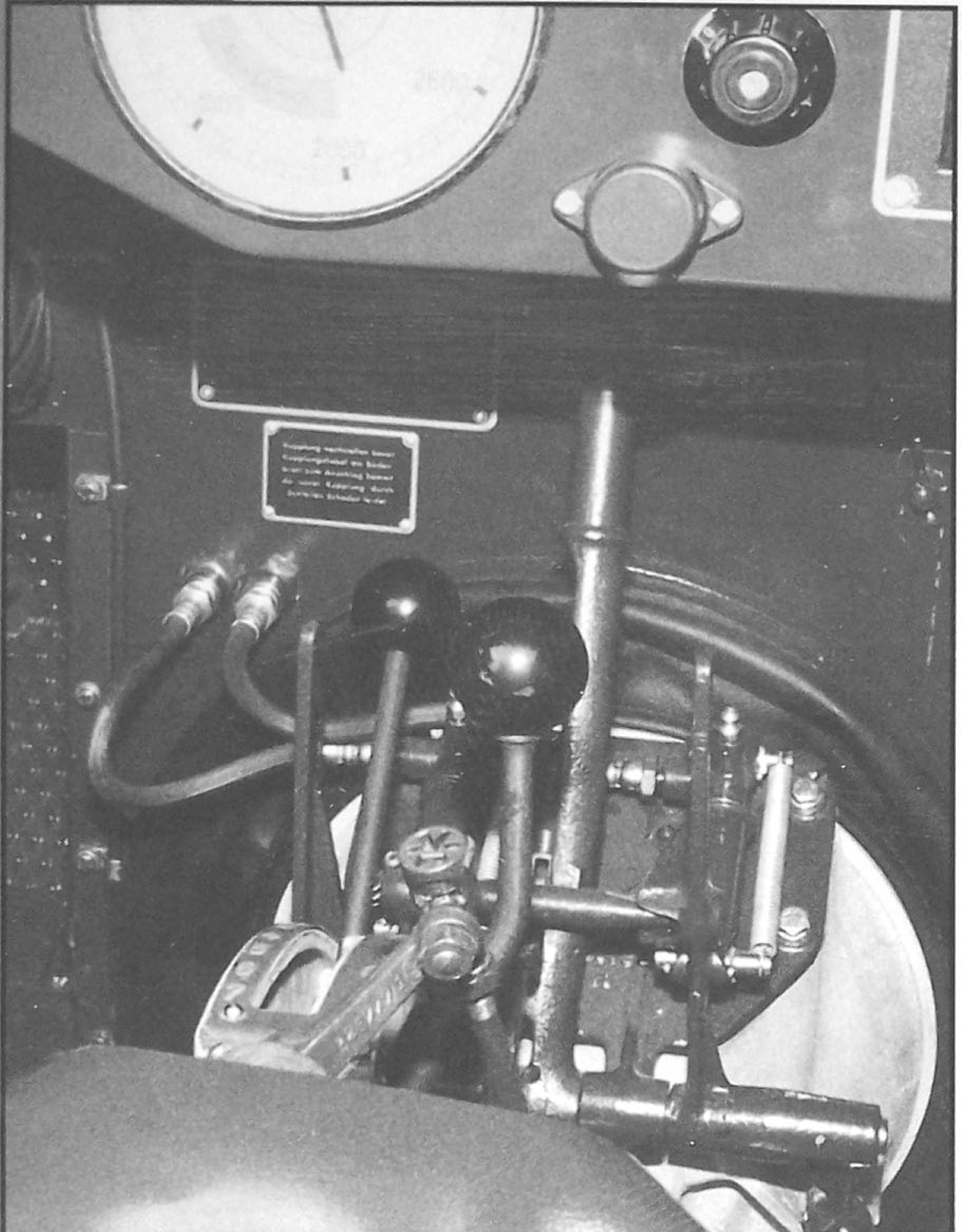
An overall orientation view of the driver's and radio operator's positions in the front of the vehicle. The FuG Spr Ger f radio set is seen at the upper right, with the driver's console located at the upper center. The driver's floor pedals can be seen just behind the steering wheel. The vehicle transmission is in the center of the photo, cover by a metal and fiber shield. The larger seat to the left seated three of the four grenadiers, while a single seat opposite seated the fourth. This seat is just out of view at the lower right near the head of the MG tripod. The butt of the forward MG and its ammunition belt can be seen at the top of the photo.

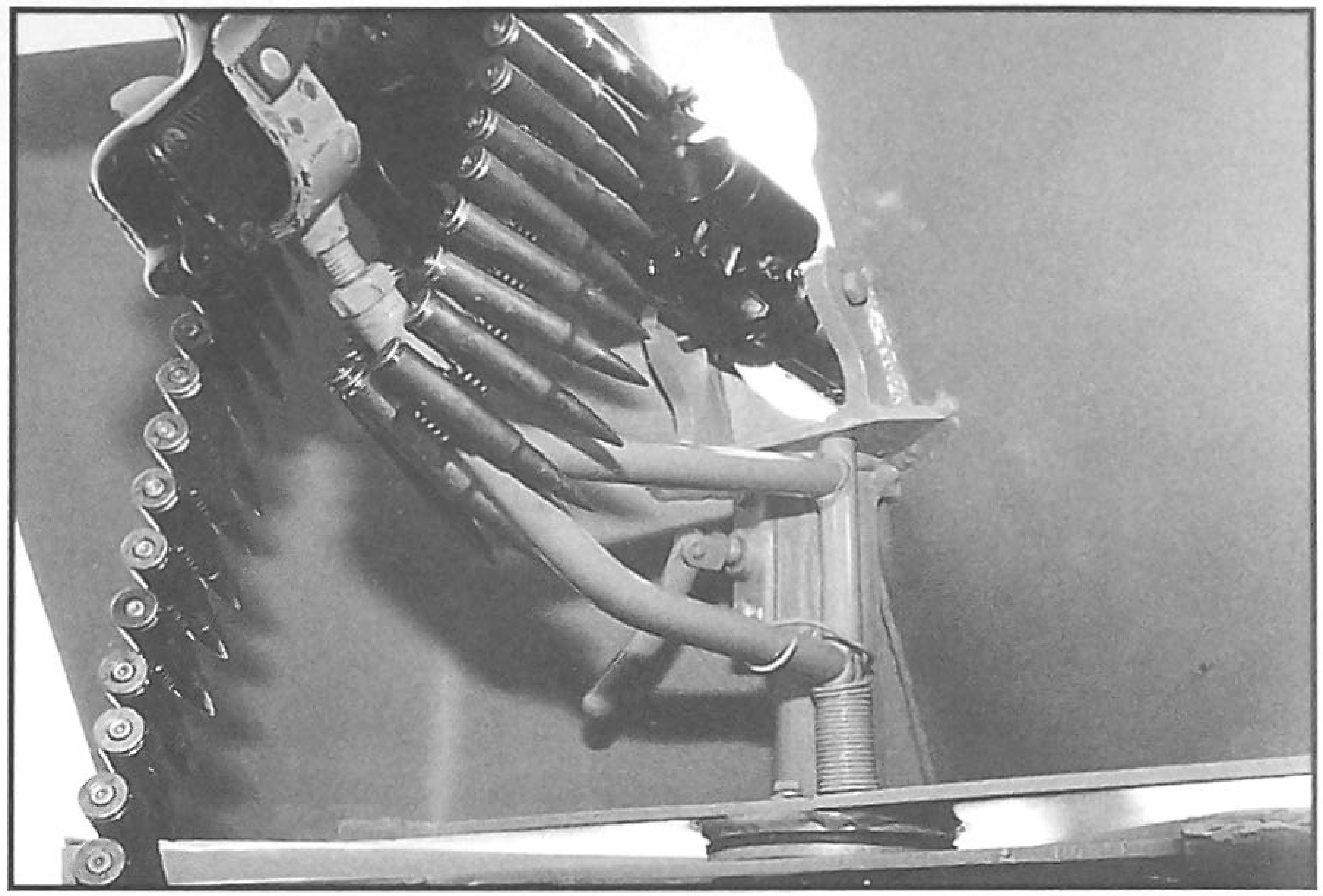


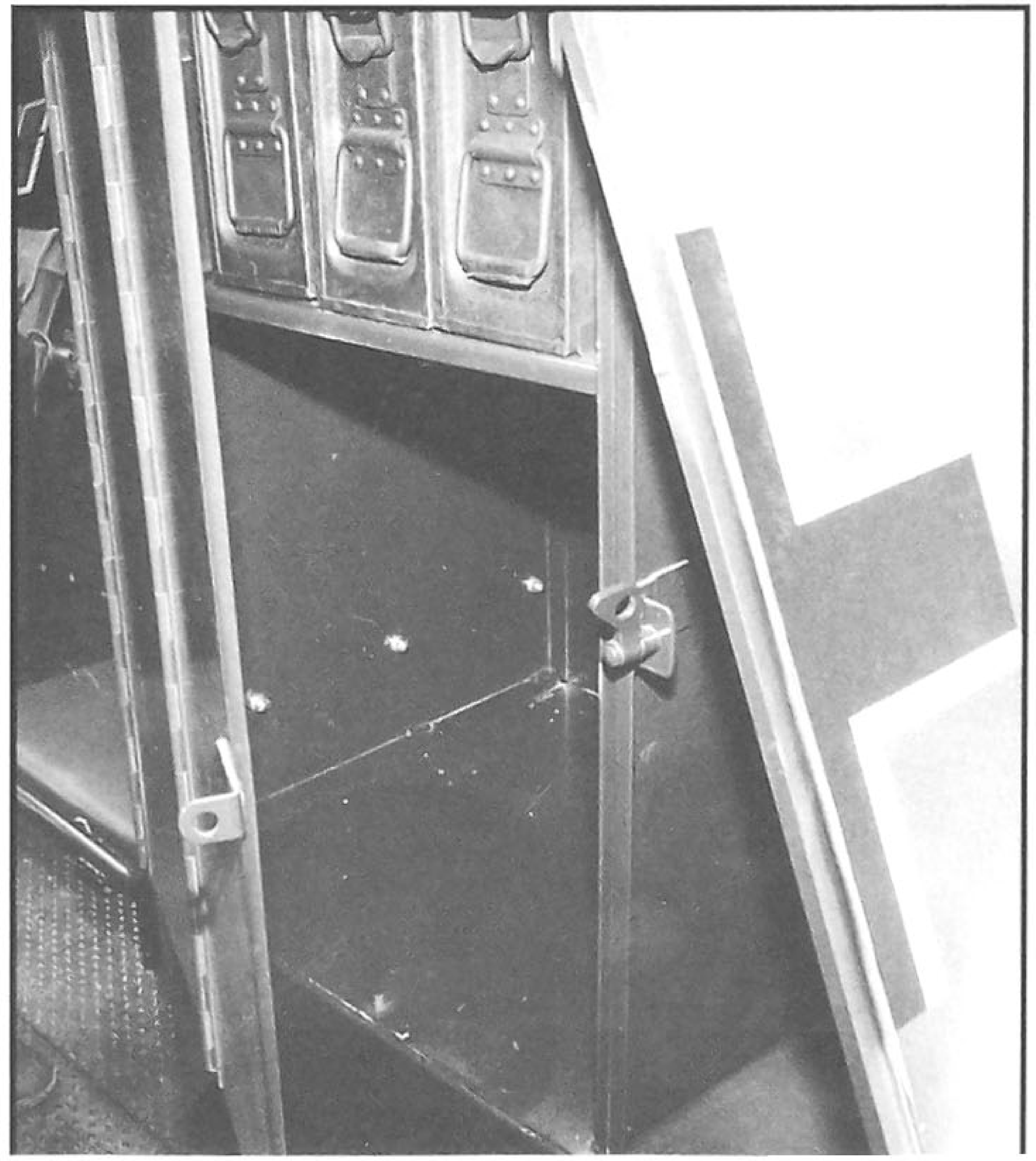
In this photo, the driver's clutch and brake pedals can be seen at the lower right. Spare armored glass blocks for the visors are neatly stowed next to the steering wheel. There were two types of block and the more narrow style seen here is for the front visors. The three instruments seen at the upper right are (from largest to smallest) the speedometer, the oil pressure gauge and the voltmeter. Interestingly, the odometer reads 51,965 kilometers, or 32,218 miles.



Taken from the perspective of the radio operator, this shot illustrates the stowage along the right side of the superstructure. An MP42, ammo pouch, glass blocks and traffic wand are all in evidence. The large tachometer is seen at the far left. The FuG Spr Ger f radio set is seen here in its original condition with all the placards and controls intact. The face of the radio is painted in ordnance tan. All of the placards are dark gray with white letters, with the exception of "Feind hort mit," which is red on a black background. This loosely translates as "the enemy is listening!"







Above: a closer look at the transmission and its controls. The transmission had seven forward speeds and three reverse. The number of gears made the tachometer an essential part of the driving operation! **Top right:** The forward MG shield and mount. This forward mount is unique in that it cradles both the center and the stock of the gun, making it an extremely stable platform for firing, even when the vehicle was moving. **Right:** the locker at the rear of the vehicle could hold twelve cans of MG ammunition, each of which contained five 50-round belts. These belts could be easily linked together for continuous fire.


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